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Larger Buying Despite High Prices

With steel prices steadily increasing and deliveries growing rapidly worse, car and locomotive builders have not been especially optimistic over their business prospects for 1916. The withdrawal of several promising car inquiries has served to emphasize the dark side of the steel situation. That the equipment market has not been actually as discouraging as generally thought is evidenced by the following comparison of the domestic orders for cars and locomotives placed in January and February, 1916, according to our records, with orders placed during the corresponding months of 1915:

	1916	1915
Locomotives	503	67
Freight Cars	23,936	7,555
Passenger Cars	385	130

Seven times as many locomotives and three times as many cars were purchased in 1916 as in the corresponding months of 1915. Up to March 6, according to our records, over 200 additional engines and over 4,600 additional freight cars have been contracted for, which would indicate that the buying movement is still in progress. The railroads find themselves in the unfortunate position of being swamped by a traffic which demands that they buy new equipment, at a time of almost prohibitive prices and uncertain and delayed deliveries.

Handling Traffic on Track Elevation Work

The track elevation work on the Chicago & Western Indiana at Chicago, described elsewhere in this issue, illustrates a number of special problems encountered in work of this kind which are not always realized. These include the special measures which are necessary to maintain traffic without interruption during the progress of the work, and the effect of these measures on construction costs. The authorization of large expenditures for the separation of grades on existing lines is made only at points where trains are numerous. On such lines it is impossible to discontinue the traffic or to allow interference with it and the sequence of construction operations must be arranged with this primarily in view and with economy of construction secondary. In many details the necessity for the maintenance of traffic increases the cost of the work materially over that which would be possible if it could be conducted with reference solely to economy of construction. A later survey and measurement of quantities such as the Government valuation forces are now making will show none of these added expenses, necessary though they are, to the conduct of the work. In handling work of any magnitude it is necessary that the various operations be conducted in harmony with the construction plan as a whole. On track elevation work this is even more necessary than elsewhere, for not only is each particular operation a step in the development of the entire project, but it affects the handling of traffic as well. This requires more than usually close harmony between all concerned. As described in the article referred to, the engineers in charge of the work on the Chicago & Western Indiana accomplished this by means of a daily staff meeting in which all problems were discussed and each man in charge of a certain section of the work was kept fully informed regarding progress on other portions. It is interesting to note that this large project and similar work of considerable magnitude on the Chicago, Milwaukee & St. Paul and the Chicago, Rock Island & Pacific, are being handled by railway forces rather than by contract.

Freight Congestion in the East

The statements of Howard Elliott, president of the New York, New Haven & Hartford, and of J. S. Brown, representing Chicago shippers, which are printed at some length elsewhere in this issue, give quite clearly the main features of the situation as it appears to eastern railroads and to western shippers in regard to the extraordinarily large number of cars on the lines of the railroads terminating at Boston, New York, Philadelphia and Baltimore. These statements were made before the Interstate Commerce Commission, which, on its own motion, held an informal hearing on Monday and Tuesday, at which representatives of the railroads and the shippers presented their views in regard to what might be done to get a freer movement of cars and a return of box cars belonging to western lines which are now on eastern lines. The point on which the most radical difference of opinion developed was as to whether or not an increase in demurrage charges, a shortening of the free time allowed for unloading

export freight, and similar provisions would help to clear up the situation, or would simply result in giving eastern railroads additional revenue without hastening the unloading of cars and the return of empties to the West. Until some such remedy as this has been tried it can be nothing but a matter of personal opinion as to whether it would succeed or not. Grain exporters claim that the loading of vessels is largely under the direction of the British government and that increased demurrage charges would have no effect one way or the other in permitting them to unload cars more promptly. Some of the western shippers appeared to feel that their business was being discriminated against in favor of the munitions business. On this point it would appear that Mr. Elliott's statement is strong evidence to the contrary. He points out that only 5 per cent. of the business now being done by the New Haven is munitions business, and while western shippers contended that if 5 per cent. of all the cars now on the eastern lines were returned the car shortage in the West would be entirely relieved, no account apparently was taken of the fact that it is not within the province of the eastern railroads to discriminate against any class of business offered. Moreover, the New Haven is doing far more munitions business than most of the eastern railroads, and it is doubtful if anything like 5 per cent. of the business of all the roads terminating at the Atlantic seaboard is munitions business. It was a significant fact that representatives of chambers of commerce and commercial bodies at both Philadelphia and Baltimore expressed the strong conviction that the roads were doing everything in their power to be fair to all classes of shippers, and the difference of opinion of the various interests who suggested that there might be conscious or unconscious discrimination was so great as to rather discredit the trustworthiness of these opinions.

DOING "TEN HOURS' WORK IN EIGHT HOURS"

ONE of the assertions spokesmen of the train service brotherhoods repeatedly have made, and for which they have secured widespread publicity, is that they are not asking for higher wages, but for shorter hours. They say that what they want is a chance to do "ten hours' work in eight hours." They try to show that in other lines of industry reductions in hours of work have not led to reductions in the amount of work done per employee, and that the same thing would be true in the railway business. The railway managers do not want their employees to work any longer hours than is necessary. If convincing facts instead of glittering generalities were presented in support of the proposition that the train service employees would do "ten hours' work in eight hours," the managers would jump at the chance to reduce hours. But no such facts have been presented. On the contrary, the spokesmen of the employees, in attempting to show the practicability of an eight-hour day on railways, are using an argument which shows that they have no intention or expectation of really doing ten hours' work in eight hours.

The spokesmen of the employees have conceded in statements to the public that as railway divisions are now arranged it would be impossible to get most freight trains over the road in eight hours without increasing their speed; and they demand that an hour be made the equivalent of 12½ miles run instead of 10 miles, as at present. As W. G. Lee, president of the Brotherhood of Railroad Trainmen, has said: "We have agreed to the 12½ mile basis in lieu of the absolute eight-hour day." The spokesmen of the employees also recognize the fact that the speed of freight trains cannot be thus increased without reducing the average load per train. They have explicitly asserted that the reason why trains cannot now be moved over the road more rapidly is that the railway managements "overload" them. In other words, their argument is, in substance, that if the "eight-hour basic day," which the employees demand, shall be granted, and the managements shall desire to make it a real eight-hour day, and to enable the employees to do "ten hours' work in eight hours," the managements can accomplish this by the simple device of reducing the load per train and having the trains run faster.

But under this plan what becomes of the proposition that a reduction in the hours of work of the employees would not result in any reduction in the amount of productive work done by them? What becomes of the argument that they would do "ten hours' work in eight hours"? What is the work which men in train service are employed to do anyway? Merely that of running trains? On the contrary, the running of trains is but a means to an end. That end is the movement of traffic; and what the men in train service are really employed to do is not merely to move trains, but to move the traffic the trains haul. The railways derive their revenue, not from running trains, but from handling traffic. But to reduce the loads of freight trains in order to run them faster, and thereby enable the train service employees to run 100 miles in eight hours, instead of in ten hours, would necessarily reduce the number of ton miles moved in a day by each train and each train crew. Therefore, the employees would not move as much traffic in eight hours as in ten; they would not "do ten hours' work in eight hours."

Obviously, if each employee, on the average, produced fewer ton miles—handled less traffic—for a day's wage, as would be the case under this plan, it would be necessary to employ more men to handle the traffic. The result would necessarily be an increase in the total wages paid and in the operating expenses of the railways, the amount of which would depend on the number of additional men that had to be employed.

The public should not be deceived by the sophistical statements regarding what the employees are demanding, and what the effect of granting the demands would be, that are being put out by the spokesmen of the brotherhoods and by certain professional friends of organized labor, whose every utterance regarding the so-called eight-hour day movement is a demonstration of their ignorance of railway matters. The demands of the train service brotherhoods cannot be acceded to or the principles they involve carried out in any way whatsoever without causing an enormous increase in railway wages and railway operating expenses. The railways could not stand the increase in wages and in expenses which would result without large increases in freight and passenger rates which the public would have to pay. The only way the public can avoid the increases in rates is to prevent the proposed increases in wages and expenses.

HOW PROSPEROUS ARE THE RAILWAYS, IN FACT?

THE railways of the United States are much more prosperous than they were a year ago. In fact, they are more prosperous than at any time within the last three years. But the degree of their prosperity is being greatly exaggerated. The exaggeration is unfortunate because it encourages the belief that the roads can afford to increase wages and incur other additional expenses, and do not need further increases in rates or other forms of amelioration of the regulation applied. It is, therefore, most desirable that the actual facts regarding present earnings, expenses and net return should be accurately and fully presented.

The Interstate Commerce Commission divides the railways into three classes. The complete statistics regarding the earnings and expenses of the Class 1 roads for the six months, July to December, 1915, inclusive, have just become available. These roads have 90 per cent of the total mileage operated and 97 per cent of the total earnings. Therefore, although they exclude all of the smaller lines earning less

than $1,000,000 a year, their statistics faithfully portray the railway situation as a whole.

Now, it is true that in some recent months the Class 1 roads have shown very large increases in total earnings and relatively still larger increases in net operating income, which latter amount is what is left after the payment of expenses and taxes and may be used for paying return on investment. For example, in November, 1915, the net operating income per mile of these roads was 90 per cent larger than in November, 1914, and in December, 1915, it was 83 per cent greater than in December, 1914. In the last six months of the calendar year 1915 their total earnings per mile were almost 12 per cent larger than in the same months in 1914, and their net operating income 37.8 per cent larger.

But these figures standing alone are entirely misleading. They result from a comparison of months when railway earnings were at the lowest ebb with months when they were the largest in history. Furthermore, they take no account of the increase in the investment which is and must be constantly going on and on which a return must be earned and paid. No matter how large is the increase in net operating income, if it is accompanied by a relatively larger increase in investment in property the result will be a reduction in the percentage of return earned on investment; and it is the percentage of return earned on investment that is the vital factor.

In order to get at the real, pertinent facts regarding the railway situation let us compare the statistics of earnings and expenses for the last six months of the calendar year 1915 with those for the last six months of 1914, which was a bad period, and with those for the last six months of 1912, which was the last corresponding period when earnings were good. These figures, together with the cost of road and equipment per mile on June 30, 1912, 1914 and 1915, as shown by the statistics of the Interstate Commerce Commission, and the percentages of return earned in each period, are given in the following table:

COMPARISON OF OPERATING REVENUE AND OPERATING INCOME PER MILE WITH INVESTMENT IN ROAD AND EQUIPMENT PER MILE FOR 1912, 1914 AND 1915—CLASS I ROADS

1915

	Operating revenue	Operating expenses	Net operating revenue	Taxes	Operating income
July	$1,130	$750	$380	$50	$330
August	1,191	765	426	51	375
September	1,251	774	477	51	426
October	1,323	815	508	52	456
November	1,303	800	503	53	450
December	1,253	802	451	53	398
Total	$7,451	$4,706	$2,745	$310	$2,435
Increase per cent compared with 1914...	11.8	2.3	33.1	5.8	37.8
Increase per cent compared with 1912...	2.8	1.03 dec.	10.2	11.5	9.4

Cost of road and equipment on June 30, 1915, $78,682 per mile.
Per cent of operating income on cost of road and equipment, 3.09 per cent.

1914

	Operating revenue	Operating expenses	Net operating revenue	Taxes	Operating income
July	$1,124	$785	$339	$50	$289
August	1,175	789	386	50	336
September	1,182	781	401	50	351
October	1,169	786	383	50	332
November	1,023	732	292	49	242
December	990	728	262	44	217
Total	$6,663	$4,601	$2,063	$293	$1,767

Cost of road and equipment on June 30, 1914, $74,781 per mile.
Per cent of operating income on cost of road and equipment, 2.36 per cent.

1912

	Operating revenue	Operating expenses	Net operating revenue	Taxes	Operating income
July	$1,116	$752	$363	$45	$319
August	1,218	780	437	45	395
September	1,212	779	433	47	389
October	1,318	831	487	47	443
November	1,218	809	409	46	364
December	1,166	804	362	48	315
Total	$7,248	$4,755	$2,491	$278	$2,225

Cost of road and equipment on June 30, 1912, $69,420 per mile.
Per cent of operating income on cost of road and equipment, 3.20 per cent.

These statistics show that while total operating revenue per mile in the last six months of 1915 was 11.8 per cent more than in the corresponding months of 1914, it was only 2.8 per cent more than in the corresponding months of 1912. While there was an increase in operating expenses of 2.3 per cent as compared with 1914, there was actually a reduction of over one per cent as compared with 1912. While there was an increase in net operating revenue of 33 per cent over 1914, the increase over 1912 was only 10 per cent. The increase in taxes over 1914 was 5.8 per cent, while over 1912 it was 11.5 per cent. Consequently, while the increase in net operating income per mile over 1914 was almost 38 per cent, it was, as compared with 1912, only 9.4 per cent. On June 30, 1912, the cost of road and equipment per mile of Class 1 roads was $69,420. On June 30, 1914, this had increased to $74,781, and on June 30, 1915, to $78,682, an advance over 1912 or 13 per cent. Therefore the net operating income during the last six months of 1912, $2,225 per mile, was 3.2 per cent on property investment; in the last six months of 1914 the net operating income, $1,767 per mile, was only 2.36 per cent on the cost of road and equipment; and in the last six months of 1915 the net operating income, $2,435 per mile, was 3.09 per cent on property investment. In other words, the investment per mile in road and equipment increased 13 per cent between 1912 and 1915, while net operating income for six months increased only 9.4 per cent; and in consequence the percentage of return earned on property investment in the last six months of 1915 was actually less than in the last six months of 1912, although much more than in the last six months of 1914.

The fiscal year of the railways ends on each June 30. It is a well known fact that earnings in the six months from January 1 to June 30, inclusive, are never as large as in the preceding six months. The last six months of the calendar year 1912 were included in the fiscal year which ended on June 30, 1913; and in that fiscal year the percentage of return which all the railways of the United States earned on their property investment was only 4.87 per cent. In view of all the facts, it is perfectly safe to predict that if the rate of increase in net operating income shown in the last six months of the calendar year 1915 is maintained and only maintained during the six months January to June, 1916, the average net return earned by all the railways on their property investment in the fiscal year which will end on June 30, 1916, will be less than five per cent.

The foregoing figures certainly do show that the railways are doing much better than they were a year ago. At the same time they certainly do not show that they are enjoying a degree of prosperity warranting large increases in wages and a cessation of efforts to secure increases in their rates and a reformation of regulation. They demonstrate that the railways cannot grant the increase of $100,000,000, or 25 per cent in wages which their train service employees are demanding without increases in their rates. If these employees are entitled to an increase of 25 per cent then all employees are entitled to it, and this would cost $332,000,000 a year. The figures certainly demonstrate that the railways can not make any such enormous increases in wages without extremely large increases in rates.

As we have shown, on the present basis of earnings the roads as a whole probably will receive a return of less than five per cent on their property investment in the fiscal year ending June 30, 1916. Ten years ago, in the fiscal year ending June 30, 1906, they earned 5.39 per cent. Then began the successful movements for large increases in wages and reductions in rates, and never since have they been able to earn that large a percentage of return. Does not the public believe that it is about time that employees who want higher wages and shippers and travelers who want lower rates should be told to stand back a while and give railway investors a chance? If there is to be a real and lasting revival

of railway expenditures and expansion the claims of investors, whether present or prospective, must no longer be subordinated to the claims of any other class or classes of persons.

HOURS OF SERVICE AND A QUESTION OF FACT

THE *Railway Age Gazette* in its issue of February 25 called attention to the way Mr. Garretson, president of the Order of Railway Conductors, had got mixed in his figures as to the number of cases in which 16 hours of service had been exceeded by trainmen. Now comes a Mr. Enochs, purporting to represent the trainmen of the Pennsylvania system, who says: "The tendency is toward keeping men on continuous duty for 16 hours, tying freight crews up on the road between the fourteenth and sixteenth hour whenever it is possible."

Mr. Enochs avoids figures, but the tendency to which he refers is capable of statistical proof or disproof. In the engineer's and firemen's wage arbitration in western territory in 1914 the conference committee of managers offered as exhibit No. 12, a statement covering for the roads involved the trains run by them in 1913. The number of trains run by the 70 roads reporting was 5,949,635. The number that exceeded the 16-hour limit was 34,888, or .6 of one per cent. The number tied up to avoid violations of the 16 hour law was 35,491, or .6 of one per cent. On page 10 of the report of the chief of the division of safety of the Interstate Commerce Commission for the year ended June 30, 1915, there is presented "a comparative analysis of the primary and contributing causes of instances in which employees in the train service were on duty longer than 16 consecutive hours for the years ending June 30, 1913, 1914 and 1915." This shows that the number of employees affected by these causes was 261,332 in 1914, and only 59,373 in 1915.

There is necessarily a definite relation between the number of employees held over 16 hours and the number of trains so held. The number of employees held in 1915 was only 22.7 per cent. as many as in 1913. If this percentage is applied to the percentage of trains that in 1913 exceeded the 16-hour limit, we have less than one-seventh of one per cent. as an approximate indication of the number of all trains in western territory that exceeded this limit in 1915. The specific charge is that the railroads tend to avoid the letter of the law by "keeping men on continuous duty for 16 hours, tying freight crews up on the road between the fourteenth and sixteenth hours whenever it is possible." The 16-hour law has been in effect since March 4, 1908. In five years this "tendency" in western territory had grown to the extent that six-tenths of one per cent. of all trains were tied up on account of the hours of service law. There is no reason to doubt that the decrease of instances of employees held over 16 hours has been fairly paralleled by the decreases in number tied up on account of the law. The actual "tendency" is fully represented by the reduction in two years of 77.3 per cent. in the number of employees who for any cause were on duty longer than 16 consecutive hours.

NEW BOOKS

Laboratory Test of a Consolidation Locomotive. By E. C. Schmidt, J. M. Snodgrass and R. D. Keller. 130 pages. 57 illustrations. 6 in. by 9 in. Bound in paper. Published by the University of Illinois, Urbana. Price 65 cents.

This book is published as Bulletin No. 82 of the Engineering Experimental Station of the University of Illinois, and presents the results of a series of laboratory locomotive tests, which constitute the first work of the recently established locomotive testing laboratory of the University of Illinois. The tests were made on a typical consolidation locomotive loaned to the University of Illinois by the Illinois Central. Since this is the first series of tests conducted in the new laboratory, the bulletin includes a description of the laboratory equipment and the methods of testing employed.

The locomotive was first tested in the condition in which it was received from service. It was then subjected to certain repairs, and again fully tested. The main purpose of the tests was to determine the general performance of the locomotive and the performance of its boiler and engines after the repairs were made and when the locomotive was in excellent condition. The secondary purpose was to study the effect of some of these repairs upon the locomotive's performance. The maximum amount of dry coal fired per hour was 11,127 lb. or 224.5 lb. per square foot of grate per hour. The maximum equivalent evaporation per hour was 57,954 lb. or 17.65 lb. per square foot of heating surface per hour. The University of Illinois equipment makes possible the collection of all stack cinders and the information relative to cinder losses which is presented shows these losses to have ranged from 3 to 16 per cent of the weight of the dry coal fired for what might be considered ordinary service conditions and to have amounted to 27.4 per cent of the weight of the dry coal fired during one test under extreme conditions of firing and draft. during one test under extreme conditions of firing and draft.

Manual of the American Railway Engineering Association. 680 pages. Illustrated. 6 in. by 9 in. Bound in cloth and paper. Published by the American Railway Engineering Association, Chicago.

The Manual of the American Railway Engineering Association contains the definitions, specifications and principles of practice concerning railway construction and maintenance of way adopted by the Association from year to year. Only material is included which has been the subject of a special study by a standing or special committee, embodied in a committee report published not less than 30 days prior to an annual convention and submitted by the committee to the annual convention, where after consideration and discussion it has been formally adopted by the Association. Thus, all the material published in the Manual has been subjected to thorough investigation and criticism.

This, the fourth, edition of the Manual contains 200 pages more than the previous edition published in 1911. Also, all of the material in the last edition has been examined and revised by the standing committees of the Association to bring it into accord with present practice.

Among the features of interest to track men are specifications for roadway construction, for cross ties, and for rails, joints, tie plates and spikes. Designs and specifications for standard frogs and switches are also included, as well as rules for the maintenance of line, surface and gage.

Of special value to bridge men are the specifications for steel railway bridges (including design, materials and workmanship, erection and inspection), concrete construction (including cement, reinforcement and workmanship), masonry, yellow pine and douglas fir. The principles of pile driving practice, the design, operation and maintenance of water softeners, the design of engine houses, coaling stations and freight houses, and specifications for roofing materials are also of interest to men in this branch of railway maintenance. Other valuable features in this Manual include standard forms of maintenance of way records and maps, standard rules for track, bridge, building, signal and other maintenance of way forces, and specifications for creosote oil, creosote-coal tar solution and tie treatment.

The book is divided into 20 sections, corresponding to the standing and special committees of the Association, and divides the material for ready reference. It is a book which should be on the desk of every railway officer having to do with maintenance of way and structures, embodying as it does the consensus of opinion of the leading railway engineers of the country as expressed in their committee reports and action on the floor of the convention.

Letters to the Editor

GLASS SKY LIGHT CONSTRUCTION

CHICAGO, Ill.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

While waiting for a train at a station in a large eastern city a short time ago, my attention was called to the condition of the glass in the sky lights of the train shed. Although this station was built only three or four years ago, a large per cent of the glass in these sky lights is now broken. I have observed similar conditions in other large stations built even more recently, and have encountered the same difficulty in buildings erected under my direction. The problem is more or less common and is not confined to any one particular structure or road.

Because of the advantage of this general form of construction in many places and the necessity of using it in some instances in train sheds, roundhouses, etc., it seems to me that this breakage is a serious condition which warrants the careful consideration of engineers. I believe the trouble results from insufficient provision for the expansion and contraction of this glass, exposed as it is to intense heat during the summer and to snow and ice during the winter. I fully appreciate that some carefully prepared plan must be provided to prevent leakage, but this in itself does not involve any unusual difficulty. The fact that the percentage of breakages in one large station completed three years ago does not exceed four or five per cent of the number of glass units in service indicates that there is a solution of this problem if proper attention is given to it. I for one, believe that railway engineers should give this subject more careful consideration.

CHIEF ENGINEER.

ALL GOOD RAILROAD OFFICERS SHOULD BE PUBLICITY AGENTS

WYNNE, Ark.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

I have read with much pleasure that most scholarly and convincing paper by Otto H. Kahn on "The Government and American Railroad Needs," printed in the *Railway Age Gazette* of February 4. How many railroad officers have carefully read this article? How many reflect on the great lack of facilities for disseminating such information?

Do we realize that it is the spread of these ideas which must precede any change in public sentiment? If that one article were carefully read by the business men and farmers of the country, it would mark a tremendous advance toward intelligent regulation. Mr. Kahn's proposition finally to centralize the power of control in a federal commission must be preached far and wide.

This masterly presentation of the railway problem should, with similar papers and addresses, be printed in every newspaper in the United States. I have in mind now another address, most able, concise and convincing; that of President L. E. Johnson of the Norfolk & Western, printed in the *Railway Age Gazette* of November 12 last. We cannot hope for such widespread publication just now, but if each officer of every railroad sees to it that such papers and addresses are printed in one or more newspapers in his community, the demand on the part of the people will soon cause the great dailies to take more notice of such arguments than they now do. The people are giving more thought to the matter than ever before. They realize that the State legislatures and State commissions have complicated matters and that a change is necessary; and now is the time to crystallize the already existing sentiment for fair play. To do this we must get the matter before the people; the forum; the highest court.

Merely publishing these addresses in papers devoted to railway work, does not fully reach the class we are after. When these truths reach the people, then, like other truths, they will become a part of the zeitgeist, when the great questions at issue will be settled and not before. We railroad men must not only talk the truth, in and out of season, we must also see to it that these masterful arguments are printed in the country and town papers. That we can do.

W. C. MORSE,
Superintendent, St. Louis, Iron Mountain & Southern Railway.

THE TRAINMEN'S PROPAGANDA IN NEW YORK STATE

BUFFALO, N. Y.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

You have started none too soon to expose the deceptions which the railroad labor unions are spreading before the people in the newspapers throughout the country. The direct move to get higher pay is only one element of their propaganda. Full-crew bills and short-train bills are prepared and ready to be sprung wherever that means of bleeding the railroads is not already in satisfactory shape, or whenever the local leaders in any State are temporarily short of other ammunition. I append to this letter an article from the Utica (N. Y.) Herald of February 1 (see below) which will illustrate the situation in this State. It purports to be a despatch from Albany, and has a big display head, of which I have included only a part. I send this to you that your readers may see an example of the skilful press-agent work that is being done for the supposed benefit of the trainmen in the State of New York. The brotherhoods have always had the friendship of the press, generally; at least to the extent of getting their views printed at almost any length; and they, if anybody, could get along without a literary bureau; but now they seem to have the double advantage of liberal space accorded by the newspapers and a high quality of skill in word-picturing furnished by themselves. I have italicized some of the words in this press notice, for the purpose of showing up its insincerity.

It opens with a reference to a bill to require by law the use of a muffler to soften the noise of the exhaust of locomotives. This probably is only a feeler, introduced to facilitate negotiations; for nobody has seriously proposed anything of that kind. As everybody knows, the most practicable and simple method of reducing the noise of the operation of locomotives is to use compound engines; but the costly experiments in compounds, some twenty years ago, and the complete abandonment of the compound principle, except in the giant Mallets, is sufficient evidence of the immense sacrifice of economy which would be necessary if anything of the kind were to be universal.

Coming now to the main point, the writer begins with mention of a "campaign" of regulation of railroads; but whether there is anything resembling a campaign outside the office of the assemblyman who fathered this bill, is highly questionable. Has anybody heard of anything in the nature of a campaign on this subject? The claim that the bill to limit the length of trains has met with "general approval throughout the state" is a glittering generality of the first water. The railroads would be entirely safe in challenging Mr. Mead to produce a half dozen letters of approval except from narrow partisans of the brakemen. The statement says "many" letters have been received; but "many" is a comparative word, and may mean even fewer than six.

Coming down now to the third paragraph, these alleged friends of the brakemen are partly identified; they are "shippers." They are to be found "in all parts of the state." They "recognize" in this proposed law a benefit to themselves; for long trains are very expensive to them! Have you, Mr. Editor, heard of any shipper who has felt aggrieved because his cars were moved in trains of a length which he did not

approve? The roads, it is charged, "have adopted" a policy of holding cars to make full trains; do you find, from your knowledge of the railroad field, that the practice in this respect has been changed during the past ten years in the least degree?

"Statistics compiled by the government" are said to show that long trains are directly responsible for a great increase in the percentage of fatal accidents. Has the government ever published anything of this kind? Have the railroads made any reports to the Interstate Commerce Commission, or given it any data, in relation to the length of trains and the influence of length on loss of life? Nobody but this press agent has ever heard of anything like that.

It is claimed that the number of derailments has doubled in seven years, and that the principal cause is the "increase in the weight of trains." There is, of course, no evidence of this; but our romancer evidently hopes to confuse the uninformed reader by the implication that a hundred cars in a single train put more stress on the rails than would the same number of cars in two separate trains.

The reference to air brakes has been put into this screed evidently for the purpose merely of providing a suitable amount of filling, and therefore need not be noticed.

The concluding declaration, that "long trains mean short lives for trainmen," is intended, no doubt, to clinch the whole argument. As the trainmen have been unable, at any of the hearings, whether at Albany or at Harrisburg, or elsewhere to show that a single life has been sacrified, or even imperilled, by the lengthening of freight trains, this point can scarcely need an answer; but it illustrates the fatal facility with which general statements are used by false "friends of the people" to conceal specific facts. Just for the sake of argument admit, for a moment, that the universal practice of running freight cars in trains of 100 each might introduce an element of danger which is not present with 60-car trains; how many trainmen would be killed in a year, or in 20 years? In other words, by what percentage is the danger increased? A law like that proposed would probably increase the safety of trainmen in about as definite a proportion as one to put iron bars on their bedroom windows, to prevent them from walking out in their sleep; or one requiring all trains to stop 30 minutes at every water station, to permit the whole train crew to compose their minds.

I have italicized the word "fight" in the last paragraph merely to suggest to the reader what a foolish method we have of making our laws. The appeals of the labor unions to legislative committees and the arguments that have to be put up by the railroads in meeting these claims may well indeed be looked upon as the elements in a fight, judging by what is generally heard at such conferences; but to those who still hope that our state governments may sometime be purified, the uppermost thought in this connection is the wish that technical questions like this may some day be dealt with and settled by men who know something about them. With a public service commission, consisting of properly qualified men, the question of long trains or short ones, and indeed all operating questions, can be taken up in a business-like manner; no fight, no deceptive pleas on either side, and no wasted energies expended on protracted hearings in which no light is thrown on any of the practical aspects of the question.

A. BISON.

ANOTHER BILL TO LIMIT TRAIN LENGTH

[From the Utica Herald]

A bill will be introduced in the Legislature this week compelling all railroads operating in this State to equip steam locomotives with a muffling device which must be used while passing through a city or incorporated village to muffle the exhaust. This will reduce the noises which with the increased traffic on the railroads have become a disturbing element in all communities.

The *campaign* of regulation of railroads which began with the short train bill introduced by Assemblyman James M. Mead of Buffalo is meeting with *general approval throughout the State.* Since the announcement of the introduction of that bill Assemblyman Mead has received *many letters* commending the measure and pledging support. The Mead bill was originally introduced to protect the lives of trainmen and to *circumvent* the *attempt* of the railroads *to evade* the full crew law by increasing the length of trains.

Shippers in all parts of the State have joined in approving the short train bill. *They recognize* in it a measure of relief from the delays in shipments which are so *expensive to business men.* Since freight trains have grown to the enormous lengths of today the railroads *have adopted* a policy of holding loaded cars in the yards *for days* waiting to get enough cars to make up a big train. This means additional expense as well as loss of time to business men.

Statistics compiled by the Interstate Commerce Commission *show* that long trains are *directly* responsible for a *great* increase in the percentage of accidents and loss of life. In seven years the average length of freight trains has been more than doubled. In that period the Interstate Commerce Commission figures show the relative number of *derailments* has *increased* 100 per cent. *Most* of these derailments are due to the increased weight of *trains* and the stress on the rails. Another menace of long trains pointed out by the Interstate Commerce Commission is the failure of air brakes, which causes the buckling of trains. The rules of the commission require that no train shall contain more cars than can be effectively controlled by air brakes. The same ruling provides that at least 85 per cent. of all cars in a train shall be equipped with air brakes.

The railroads now run trains of from 100 to 160 cars. The manufacturers of air brakes concede that no train of more than 60 cars can be effectively controlled by air brakes.

"Long trains mean short lives for trainmen," said Assemblyman Mead, the introducer of the bill limiting the trains to 60 cars in length. "If we can impress this fact upon the Legislature I believe we can win our *fight.* I hope the people of the State will do what they can to help along this *fight.*"

A NEGLECTED OPPORTUNITY

ST. PAUL, Minn.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

The railroads of this country possess the most magnificent advertising possibilities and apparently are not aware of them. Their thousands of freight and passenger stations are the business points of several hundred million people a year.

On the blank walls of these stations, passenger and freight, there might be hung charts that would in a short time do more to educate the people of this country about the true condition of the railroads than any other method which could be employed.

These might be used to graphically portray the railroad mileage of the country; how much of this mileage is in the hands of receivers, and has been for a period of years; what per cent the railroads as a whole return to their stockholders and to their bondholders.

By the same methods it could be shown what a slight increase in rates would mean to the railroads and how little to the average inhabitant or merchant.

I need not dilate upon ways and means, because you are much better able to do that than I am, but, having in mind that twenty thousand millions are invested in railroads; that they must pay a fair return on the capital invested, if further development is to be made, to keep ahead of the progress of the country; and having in mind what it means to the United States industrially when the railroads are prosperous, when they are buying enormous quantities of supplies of all kinds, I feel you will realize the possibilities of a plan of this kind, provided it is taken up by the railroads as a whole and performed in a really truthful and satisfactory manner.

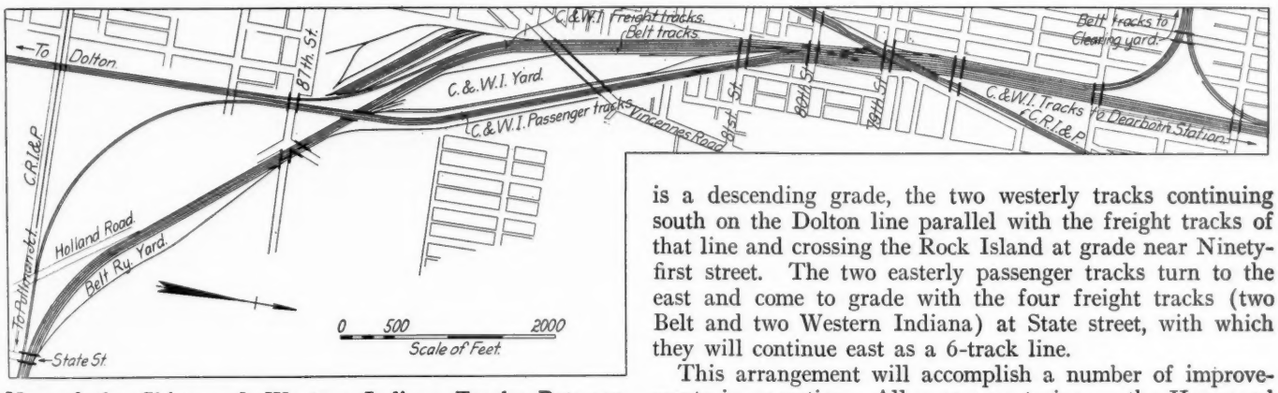
J. W. HAMILTON.

Track Elevation on Chicago & Western Indiana

A Rearrangement of Facilities is Also Being Made to Relieve Congestion in a District of Heavy Traffic

The extensive reconstruction of railroad facilities in the city of Chicago coincident with the elevation of tracks to eliminate grade crossings with the streets, has in a number of instances served also as an opportunity for the separation of grades between railroads. The most recent example of this is at Seventy-ninth street where the Chicago, Rock Island & Pacific crosses the Chicago & Western Indiana, which work was described in the *Railway Age Gazette* on March 26, 1915, page 690. In complying with an ordinance for the extension of grade separation work south from this point to State street and Ninety-first street, the Chicago & Western Indiana is carrying out a plan of extensive track rearrangement involving an "over crossing" which will greatly facilitate train movements and increase the capacity of the tracks in a district of exceedingly heavy traffic.

This part of the Western Indiana serves as a throat connecting a number of routes of diversified traffic. From the junction at Seventy-fifth street a line runs north to the Dearborn street passenger station and adjoining freight terminals. West from the junction is a 4-track line operated by the Belt Railway of Chicago, to the large interchange yard at Clearing. At Eighty-sixth street the Dolton branch turns off to the south, while from State street a 4-track line runs east to Pullman Junction, where the main line of the Western Indiana turns south to Hammond and another line also operated by the Belt Railway extends east to South Chicago. In addition to its own transfer, local freight and suburban traffic, this part of the Western Indiana serves as an entrance to the city of Chicago for five trunk lines, the Chicago & Eastern Illinois using the Dolton line, while the Chesapeake & Ohio, the Monon, the Erie and the Wabash use the main line north from Hammond. Consequently passenger and freight trains from the two branches of the Western Indiana use this neck to reach the line north of Seventy-fifth street. Freight transfer trains of the Belt Railway from both the Dolton line and the Hammond line, but principally from South Chicago, are carried through the neck on their way to Clearing and vice-versa.



Map of the Chicago & Western Indiana Tracks Between Seventy-third and Ninety-first Streets

Aside from the density of the traffic which amounts to over 200 train movements per day and which is rapidly increasing, there is a condition of cross movement because all passenger trains moving north or south from Seventy-fifth street must cross the Belt Railway tranffic to and from the Clearing yard. This combined traffic is carried at present on four main tracks from Seventy-fifth street to Pullman Junction and on two main tracks on the Dolton line. The crossing movement on the main line takes place at State street, where a special interlocking plant is provided for that purpose, while the crossing movement for the Dolton line traffic takes place at the junction with the main line at Eighty-sixth street.

The new arrangement of tracks is shown in the accompanying map. Belt traffic will come in on a four-track line from Clearing at Seventy-fifth street and turn south parallel to the Western Indiana tracks, the two westerly tracks branching off to the Dolton line at Eighty-sixth street, while the other two tracks continue in an easterly direction to South Chicago. A six-track line north of Seventy-fifth street will consist (from west to east) of 3 freight tracks, 2 main passenger tracks and a suburban track. By means of a system of crossovers at Eightieth street, two of the freight tracks will cross the two easterly Belt tracks and continue parallel with them as far as Pullman Junction. The passenger tracks will expand to 4 tracks at Eightieth street, diverge in an easterly direction from the freight tracks and rise on a 0.55 per cent grade to permit crossing over the freight tracks at Eighty-sixth street. From this point there is a descending grade, the two westerly tracks continuing south on the Dolton line parallel with the freight tracks of that line and crossing the Rock Island at grade near Ninety-first street. The two easterly passenger tracks turn to the east and come to grade with the four freight tracks (two Belt and two Western Indiana) at State street, with which they will continue east as a 6-track line.

This arrangement will accomplish a number of improvements in operation. All passenger trains on the Hammond line and the Dolton line in addition to freight trains on the latter which run north from Seventy-fifth street will cross the Belt traffic overhead without interference. The interlocking plants now at State street and Eighty-sixth street will be abolished as one plant at Eightieth street will control all train movements. In addition the Belt Railway with its increasing traffic will have the exclusive use of four tracks through this throat, two to South Chicago and two toward Dolton, with no interference with the Western Indiana traffic except in crossing the two freight tracks at Eightieth street, as previously mentioned.

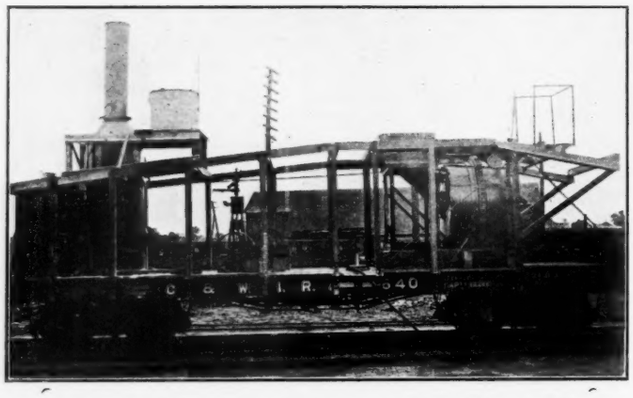
A yard containing 24 tracks will be provided for the Chicago & Western Indiana between the passenger and freight lines and will require a subway at Vincennes Road carrying 35 tracks. Other subways will be provided at Eighty-first street, Eighty-eighth street, and State street, two at Eighty-seventh street, and two at Holland Road.

Program and Organization.

In order to offer a minimum of interference with the heavy traffic it was necessary to formulate a detailed plan of construction. Because the ground occupied by the proposed overcrossing is largely independent of the original track layout it was decided to build the overcrossing first as it offered a minimum of interference with traffic. With

trains running over this line, construction work on the remaining portion of the project can be carried on with less interference. The new work south of Eighty-first street was started on August 1, 1915, and it was deemed necessary to have the overcrossing ready for passenger traffic by December 31, 1915. The amount of work which this program involved and the demands of the heavy traffic for which no less than four main tracks must be provided at all times, together with other construction in progress on the Western Indiana, required the framing of definite plans and the building up and perfecting of a large construction organization in a short space of time. To this end the force was increased between August 1 and November 1, from 200 men to 1,200 men.

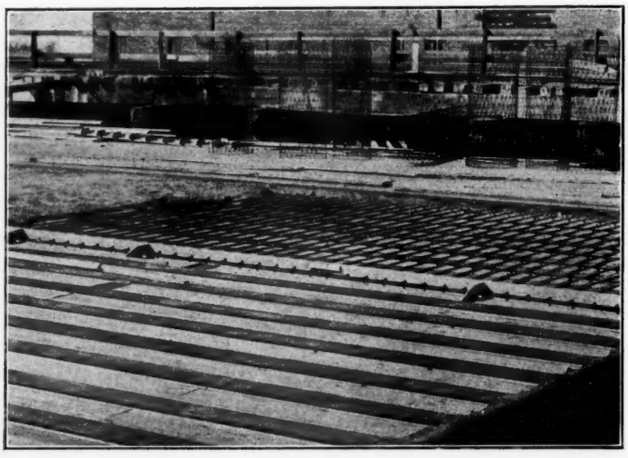
Aside from the plan to complete the "high line" first, the



The Concrete Mixer Car Before the Sheathing Had Been Applied to the Framework

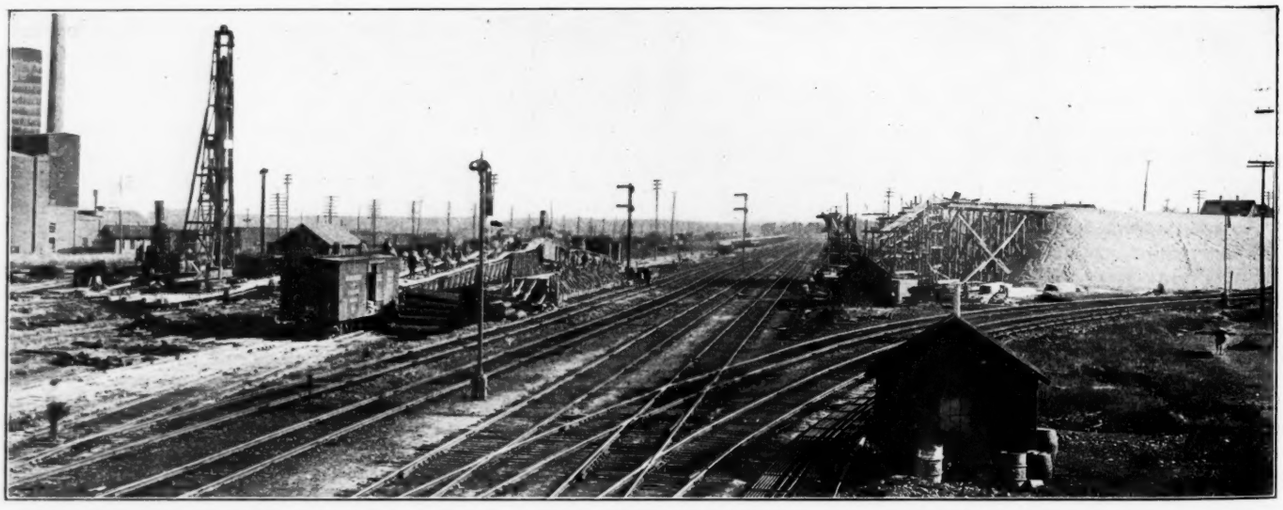
program provides for the completion of the work progressively from the north end. At Eighty-first street, where the situation is similar to that on the subways to the north, the new plan provides for a sufficiently greater number of tracks than the number now in service so that the four operated tracks may be shifted from one location to another as the

only exception to this being the erection of the steel work, part of the street excavation, the street pavement and sidewalks and the lowering of water mains. The organization for the work is shown in an accompanying chart. Every effort is made to obtain unified working of the force. Staff meetings are held daily at which the work to be done on the



Progressive Method of Concreting Steel Bridge Floors

following day is gone over in detail by the engineers and supervisors. An effort is made to lay out all work to be done by each working unit of the organization from one to three weeks in advance. This is facilitated by a chart which is posted on the wall of the staff meeting room. This chart is divided into squares representing a day's work for each unit of the organization, *i. e.*, the force under each foreman. These are arranged in vertical columns according to the days of the month and horizontally in rows for each subdivision of the construction work, as for example, the separate subways. As the work is planned, colored tickets are pinned in the various squares, different colors being used for different



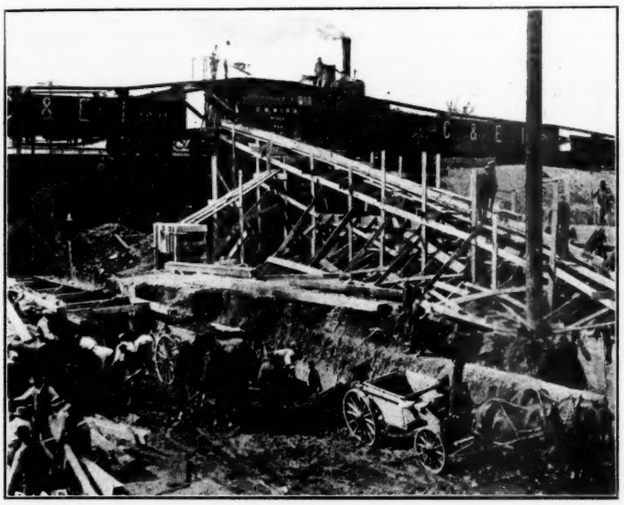
Looking East Toward the Site of the Overcrossing, from Junction of the Dolton Line Which Turns Off to the Right

various sections of the subways are completed. At Vincennes avenue it will be possible to complete the portion of the subway which will eventually carry the yard tracks without disturbing the four main tracks and subsequently to divert traffic over tracks to be laid on a portion of the completed part of the subway where the adjacent embankment is being made simultaneously with the subway construction.

Most of the work is being done by company forces, the classes of work, as masonry, steel erection, steel riveting, concrete bridge floors, waterproofing, traffic changes, etc. The ticket states the work to be done. Its position on the chart indicates the date and the particular structure concerned. This chart insures proper sequence of the various steps, avoids conflict and shows each supervisor what is expected of him and how his work is interwoven with that of the other supervisors. It also simplifies the study to de-

termine the proper program for the maximum progress and sets a pace for the men to work to.

Another means for expediting the superintendence is a private telephone system. Besides desk phones in the offices, instruments are placed in telephone booths, switch shanties, etc., in the district, thus making it possible to locate any man on the work in a few minutes. It has been possible to hold

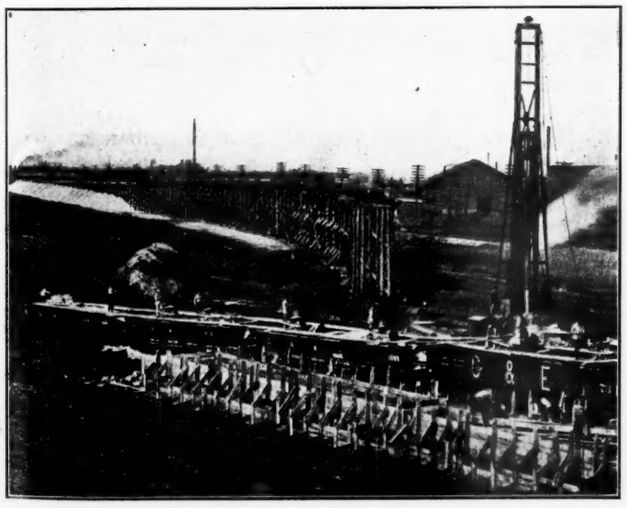


Concreting Footing for Subway Abutments. Excavation for Street Depression in the Foreground

conferences of three or more members of the staff over the phone without taking time to come together.

Earth Work

The work south of Eighty-first street required 1,300,000 cu. yd. of filling; 100,000 cu. yd. of which was obtained locally from excavations for the street subways, and from a borrow pit in the triangle between the "high line" tracks,



Looking North from the Site of the Overcrossing at Eighty-seventh Street, Showing Trestle for Filling in the Passenger Track "Highline." Driving Raymond Concrete Piles on the Right

the Dolton branch and the Rock Island tracks. Here the ground is considerably higher than the surrounding land and 67,000 cu. yd. was obtained, all of which was used in the high line embankment between State street and the overhead bridge. This material was handled with an excavating grader drawn by 18 horses and delivered in dump wagons. In Vincennes Road 24,000 cu. yd. was excavated by a steam shovel loading 1½ yd. Western dump cars handled in 6-car trains by 2-horse teams.

The bulk of the filling is sand secured from pits in Indiana. The sand is hauled in side door cars, in which a center plow is run when unloading. An average of 200 cars are delivered each day in four trains of 50 cars each.

Concrete Work

In addition to the six street subways, the over crossing bridge at Eighty-sixth street forms an important part of the work. This consists of four skew deck spans composed of encased I-beams spanning perpendicular to the piers with fascia girders on each side to carry the ends of the short floor beams required by the skew. The substructure consists of thin concrete piers and two mass abutments. To avoid deep excavations for the footings, Raymond concrete piles were used. At Eightieth and Eighty-first streets where an old swamp was encountered, the masonry is supported on piles and caisson piers extending 26 ft. below the floors of the subways. These caissons are 3 ft. 6 in. in diameter in the shaft, belled out to 10 ft. diameter at the bottom. These were excavated and filled by the open well (Chicago) method.

The completion of over 30,000 cu. yd. of concrete work in the five months ending December 31, required concrete

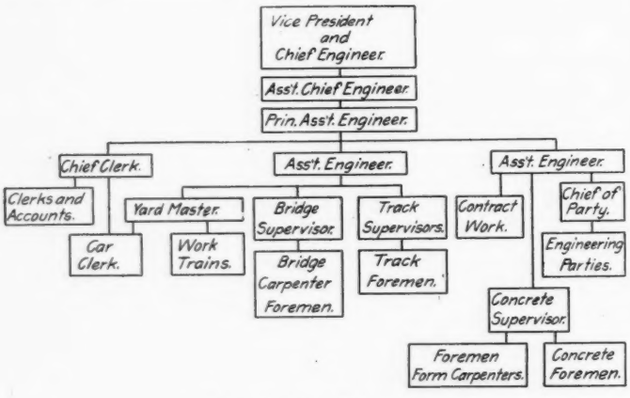
Steam Shovel Excavating for the Subway in Vincennes Road

equipment of high efficiency and large capacity. Two concrete mixing plants were provided especially for this work and are being used for all mass concrete work. The mixers are both No. 520, ¾-yd. (wet concrete) capacity Smith-Chicago mixers of the drum type. The mixer cars are shown on the accompanying photographs. One shows the car before the sheathing was applied and indicates the interior arrangement. The mixer is located over one truck with the discharge facing the end of the car. A spout mounted on a pivot makes it possible to dump on either side or beyond the end of the car, and although placed in the middle of the train it is frequently used for dumping from the end by cutting the train and separating the cars a short distance. On the opposite side of the mixer from the discharge is a batch hopper with its top projecting slightly above the top of the car. Directly over the discharge spout is a control bridge where levers are provided conveniently to control the discharge of the water, the batch hopper and the drum. The floor of this bridge is an open grating so that the discharge is observed readily and all manipulations of the mixer are easily controlled from the one position.

A 10-hp. upright slide valve steam engine operates the mixer and a winch for use in spotting the train by means of a rope hitch. Steam is provided by a 25-hp. boiler, the extra capacity being provided to supply heat for winter work. There is also a coal bunker, a 700-gal. water tank for storage and a 60-gal. measuring tank. The arrangement of

smoke stacks, water tanks, hopper and control platform on the top of the car is such that material may be wheeled from cars at both ends of the mixer car to the hopper without interference between the two lines of travel.

The concrete trains are made up and set for each day's work during the previous night. The usual arrangement is in the order named—five stone cars, the mixer car, three sand cars, and one cement car. The crew consists of one foreman, one assistant foreman, one mixer man, one engineer, eight men wheeling stone, four men wheeling sand, three men wheeling cement, eight men shoveling stone, four men shoveling sand, one man filling cement measure-boxes and one man dumping them, bulk cement being used to a great extent. The cement car is fitted with the usual arrangement



Organization Diagram

of wheeling platforms suspended from the sides of the cars and joining the platforms on the sand cars.

The mixer car arrangement is particularly applicable to the requirements of this work. With a few exceptions the concrete train can be run out over the work and the concrete spouted directly into the forms. Where the work is inaccessible to spouting, as in the piers for the overhead bridge, the concrete is spouted into a bottom dump bucket which is handled by a light derrick car.

A material yard is located at Eighty-seventh street and Parnell avenue, two 17-ton locomotive cranes being employed to sort and load materials. Push cars handled by small gas cars are used occasionally to transport small amounts of materials to the work.

The entire project is under the direction of E. H. Lee, vice-president and chief engineer, and F. E. Morrow, assistant chief engineer of the Chicago & Western Indiana. V. R. Walling, principal assistant engineer, is in immediate charge with C. E. Minor and L. W. Miller as assistant engineers.

SPECIAL LUBRICATOR FOR LIGHT MACHINERY.—Special mixtures of oil are necessary in some cases, but for light machinery using only small quantities, a mixture of 80 per cent light mineral and 20 per cent sperm is good and should not cost more than 30c. per gallon. It will not, however, stand heavy bearing pressure or form a film at slow speed. Its film thickness on metal is about 0.0002 in.—*Power.*

SWISS RAILWAY TRAFFIC.—The five privately owned railroads in the neighborhood of Berne, namely, the Bern-Loetschberg-Simplon, Bern-Schwarzenburg, Gurbethal, Spiez-Erlenbach, and Erlenbach-Zweisimmen, closed the year 1915 with a total income of only $87,172 less than in 1914, which is regarded as a good showing in view of present conditions in Europe. The total passenger movement during 1915 was 2,139,614, against 2,647,381 for 1914; freight transported, 1,065,407 metric tons, against 751,961 tons; and total receipts, $883,132, against $970,304.

HUGE SHARE OF RAILWAY PAYROLL GOES TO FEW MEN

By James O. Fagan

First and foremost among the problems to which my studies were directed during 30 odd years of service on the railroads was the great industrial struggle that was going on all the time for the improvement of working conditions and to secure for the great body of workers substantial and generous wages. Along these lines of endeavor, in course of time, railroad men were conspicuously successful.

In working out their betterment plans these men did not wait for the slow development of the community or national conscience. They went to work among themselves and invented a machine founded on organization and team work. In a very few years this machine revolutionized the railroad business in this country from top to bottom, and introduced new conceptions into the public mind in regard to work and wages and the employees' status in relation to the same.

For one thing, in particular, these comparatively few years of machine influence have been sufficient to shift the center of interest in the matter of wages, and management relating thereto, from its supposed headquarters in Wall Street to an indefinite location in what you may call Wheel Street. In other words, the men who grease the wheels, turn the wheels, and steer the wheels on the railroads today are nearer than ever before to holding the balance of power when it comes to the adjustment of payrolls and kindred interests.

It is in the midst of an industrial situation of this description that the railroad managers today, as it seems to me, are trying to steer an impartial course between their manifest duty to the railroads and the people on the one hand, and their sense of justice to all classes of employees on the other. On the part of the managers it is certainly a laborious, a delicate and an extremely worryful undertaking, and the people who are taking part and those who are interested in the wage controversy at the present time will do well to bear this end of the situation in mind.

Is a demand for justice, in other words, for a large increase in wages from one group to be complied with without any regard to similar demands from other groups when the supplies for meeting the demands of all the groups are a common fund, this fund, in the case of the railroads, being the people's pocketbook? If justice is to have anything to do with the matter it would certainly seem as if there ought to be some understanding or connection, some concerted action and agreement in such matters between all the different groups and the managers.

The point at issue in the present controversy, then, is not simply that in the year 1916 a certain group of organized workers have determined to advance their particular interests in a very strenuous way, but in particular that a comparatively small number of employees forming the train service group have actually got into the habit of late years of persistently, and at times almost forcibly, holding up the relief that is due to other groups which, although numerically ever so much larger, are yet for various reasons not quite so strenuous.

Now as it seems to me, this constantly recurring action of the train service men in relation to wages and conditions in their particular department arises to begin with from a somewhat exaggerated idea or at least a misconception of their own relative importance in the field of railroad industry. The close relationship between the train service men and the traveling public, I think, accounts for a good deal of this misconception. Indeed, roughly speaking, in the public mind, the engineers, the conductors, the firemen, the trainmen and the managers constitute the average vision, as it were, of railroad life in the public mind. And let no one presume for a minute to question either the work or the spirit of this "Big Four" or "Five" combination.

But in all justice to the rest of the service I think it is only fair to remind the public that engaged in the very heart and pith of the railroad business, there are others. After going over the matter very carefully in my own mind and judging the situation simply on the basis of my own knowledge and experience I venture to submit the following table of human values in the specific train service circle of railroad interests. The relative importance of different classes of railroad employees is as follows:

(1) Train Despatchers (The Directors of Trains).
(2) Section Foremen (The Maintainers of Roadbeds).
(3) Engineers, Towermen, Conductors.
(4) Telegraph Operators.
(5) Firemen, Sectionmen (skilled).
(6) Brakemen.

Inequality of Wages.

With this estimate in mind a comparison of wages received by these different classes of employees is very illuminating. The yearly average of wages may be roughly stated as follows: Train despatchers, $1,500; engineers, $1,800; conductors, $1,500; firemen, $1,000; trainmen, $1,000; section foremen, $750; towermen, $800; telegraph operators, $700; sectionmen, $500.

One of the regrettable features of this situation is that the gap between the Big Four men and other employees has for years been steadily widening. Between 1904 and 1914 the increases in the annual wages of train service employees varied from 35 per cent for the enginemen to 45 per cent for brakemen. The increase in the wages of clerks meantime was 14.8 per cent, of station agents 25.7 per cent, of section foremen 27.5 per cent.

In forming my estimates of the relative value to the railroads and the people of services in the operating department of railroads I have carefully considered and taken into account the following qualifications and activities: Responsibility, brain work, manual labor, technical knowledge, exposure to the elements, and training or apprenticeship required to qualify. I don't ask anybody to vouch for my estimate of the actual or comparative value of the services of section foremen, towermen or telegraph operators. I simply say that I have watched these men as well as the others at their work through a long course of years and the foregoing are the impressions I received.

As for the lowly sectionman, if anyone possessed with the idea that this work when well done is not "skilled," I would invite him, the average trainman, for example, to tackle the sectionman's job with the bar or the hammer for a single day. And furthermore, let me add to the specific illustrations I have given, the general information that for 1914, the latest year for which the official figures are available, the total payroll was $1,381,069,811 for 1,710,000 men. Of the total payroll amount the train service employees received an average of roughly $1,240 a man, while the other employees, including the officers, received an average of a little over $700 a year.

So far, then, we have had no indication of any immediate necessity or call, so far as wages or treatment is concerned or in the interests of justice of any kind, for adding $100,000,000 to the payrolls of the railroads or to the taxes, direct or indirect, of the people at large, for the benefit of the train service employees.

While it is true, then, according to the evidence, that the Big Four combination of railroad employees are receiving today a good deal more than their share of the general payroll fund, and of public recognition, it is also true that in response to outside pressure by arbitrators and otherwise, railroad managers have been obliged to place these men on a preferential basis.

No other class of workers in any department has ever received the same consideration in the matters of wages and working conditions. If there ever was any danger of these men being left out in the cold by any economical or other contrivance of the management, or weather arrangements of the Deity, it has long since been eliminated.

Of all the groups concerned in the railroad business the engineers, perhaps, have the most distinctive methods for pay slip development. In the recent western engineers' arbitration I noticed that the roads presented figures showing payments to engineers and firemen for which no actual service either in miles or hours had been rendered by the men. For the fiscal year 1912-13 these Western roads paid in this way $1,400,000 for so-called constructive, or as I should say, presumptive mileage, where the men rendered no actual service. In concrete form this unproductive expenditure works out in this way: if an engineer runs 80 miles in 7 hours he is allowed his 100 mile minimum. In other words, the railroad pays for 20 miles it does not get, or for 2 hours' work the engineer does not perform.

Any way the engineer cares to figure out his pay slip, under the dual standard of miles or hours, it's "Heads he wins, tails you lose." Of course, it is only right and proper that the day's work should be guaranteed by the schedule, and yet nothing but special legislation in favor of train service employees can account for such a large amount of unproductive expenditure. The Interstate Commerce Commission, as it seems to me, would very soon call attention to a financial drain of this magnitude in any other wing of the railroad business.

Finally, I wish to set down as clearly as possible and in definite order some of the reasons I have for declining to recognize the so-called justice of the claims of these 400,000 train service employees for a large and universal increase of wages:

(1) Because wages in the train service today are already extremely high and generous.
(2) Because these wages are also unreasonably higher than those of other employees whose services are equally valuable.
(3) Because the Big Four class of employees have an exaggerated idea of their own importance as compared with the rest of the railroad world, and their demands for additional pay are founded, to quite an extent, on this misconception.
(4) Because the Big Four as a preferred class with special privileges and concessions is a reflection on the democratic ideas and principles of the American people.
(5) And finally, because, while wages in the train service have been continually on the climb, the tension on the responsibility of the employee has slackened, while the dangers, discomforts and hardships connected with the service have been reduced to a very satisfactory minimum.

Moment of Friction.—Frictional resistance of a bearing is the resisting torque, or so-called moment of friction, or it may be defined as the quotient of the resisting torque by the mean radius of the journal.—*Power.*

Electrification in England.—To supply energy to the last electrified section of the Lancashire & Yorkshire Railway, from Manchester to Bury, via Heaton Park and for future lines, which has recently been electrified, a power station has been built a few miles out of Manchester. The generators consist of two 5000-kw. 6600-volt turbo-alternators, made by Dick, Kerr & Company, which are supplying three-phase current to two substations, Victoria station, Manchester and at Radcliffe, also a third turbine unit, consisting of a 500-kw., three-phase, 25-cycle Westinghouse geared turbine set to generate current at 440 volts for auxiliary uses.—*Electric Railway Journal.*

The Bagdad Railway and the European War

Progress Which Had Been Made by the Germans Up to the Outbreak of the War. Present Lack of Materials

By Lewis R. Freeman

The idea of a railway to the Near East and India has been in the minds of the British ever since railway building became general, 60 or 70 years ago, but thanks to political jealousies, up to five years ago that project was no nearer consummation than when it was first talked of. Even now the only line which is well advanced India-ward is the Bagdad Railway, and that, being built and largely controlled by Germany, will never be acceptable to the British, even as a link in an intercontinental system. At the outbreak of the war plans were, to be sure, well advanced on what is called the Trans-Persian railway scheme, by which England and Russia would build a line starting from the terminus of the Baku Railway at Aliat and crossing Persia and Baluchistan to the Indian frontier and on to Karachi. The project, however, like every other piece of international railway construction in Asia, is in the political crucible, and in what shape it emerges depends upon too many hair-trigger contingencies to allow much hope that anything tangible will come of it. A change of government in England, or any modification of the present entente with Russia, would be almost certain to operate to stop work on such a line, should it ever be started, or even to force a discontinuance of traffic in case it was completed and opened. All of this because political rather than commercial considerations must, for many years, govern the building and operation of any railway built between Europe and Asia—except, of course, in the case of Russia, which has adjoining territory in both continents.

Up to the outbreak of the war patriotic Britons were having much to say regarding what they called the "All Red" route to India. This railway would start at Port Said or Cairo and run almost directly east across northern Arabia to Bussorah or Koweit, at the head of the Persian gulf, and then down the east side of the gulf to Baluchistan and Karachi. As Arabia is practically under British domination, and southern Persia falls within the British "sphere of influence," this line deserves the title of an "All Red" or "All British" route. There are several obstructions, however, the combined weight of which will undoubtedly prevent the consummation of the project for many years. In the first place, its western terminus at Port Said is in Africa, not Europe, and it would not therefore, fulfill the main consideration of a trade route between the latter continent and India. In the second place, the portion of Arabia to be traversed has never been surveyed and though there may not be any prohibitive engineering difficulties, the water problem over so long a stretch of desert would be a serious one, while the controlling of the fierce nomad tribes would require practically an armed occupation of the country. Third, and most important, Turkey and Germany would have to be very thoroughly crushed in the present war before granting a concession which would practically amount to severing the whole peninsula of Arabia from the rapidly dwindling Ottoman Empire.

There is only one entirely favorable route for a railway from Europe to India, and that is one which would follow the present line of the Bagdad Railway to the city of that name, continue down the Tigris to a point near the head of the Persian gulf, and then skirt the eastern shore of the latter to the Indian frontier. In permitting Germany to oust her as the dominant influence at Constantinople, England suffered the most serious of several costly defeats which have fallen to her lot in the diplomatic skirmishes of the Near East in the last decade, and the passing of the Bagdad Railway concession to Germany is a part of the price. This route is not only by far the most direct one between Europe and India, but practically all of the 1,300 miles of its length between Konia and Bagdad lies through a region which may very fairly be characterized as one of the richest undeveloped stretches of agricultural country in the world today. This also holds true of the several hundred miles of rich delta between Bagdad and the head of the Persian gulf, leaving the only desert to be traversed that of southern Persia and Baluchistan, which will have to be crossed by any line from Europe to India. The Trans-Persian route, to which Great Britain—partly through a desire to placate Russia and partly through lack of a better alternative, now stands committed, will run through desert, once it has left the narrow zone of cultivation in northern Persia, all the way to India.

When the Bagdad Railway scheme was first brought up, the Ottoman government invited Great Britain, France and Germany to share equally in its construction. France and Germany responded favorably at once, but ill-advised attacks on the project in the British press were responsible for keeping England from coming in, and, ultimately, for the withdrawal of the French. The Germans assumed full control. The concession provided for the construction of a standard 4 ft. 8½ in. gage railway from Konia, the terminus of the Anatolian Railway from the Bosphorus, via Aleppo, the capital and metropolis of Syria, and Mosul, on the site of Nineveh, on the Tigris, to Bagdad, the Bagdad Railway Company—a German concern with headquarters at Frankfort—to furnish all materials and do the work, for which the Ottoman government pledged itself to a certain guarantee per mile. Just what the latter figure was has not been made known. French and British officials in Aleppo and Bagdad assured the writer that it was far more than the work would cost and that its payment would tie up the revenues of the government for many years to come. Meissner Pasha, the general manager, and several other officials of the Bagdad Railway, however, claimed that the guarantee might hardly cover the cost of construction, and that such profits as were realized would come through the use of German materials. This might easily be true, as the price of labor and food have more than doubled in the decade since the Bagdad Railway concession was drawn up, and a guarantee which would have allowed an ample margin of profit at that time might not prove sufficient to cover the actual cost of construction at the present. The political ascendency incident to the construction of such a line was sufficient to induce the German government to endeavor to see through its construction in any case.

Work was being pushed at a dozen points on the Bagdad Railway at the outbreak of the war, and up to that time it had been the expectation that trains would be running from the Bosphorus to Bagdad by the middle of 1917. The war accelerated work in one way, and in another retarded it. Unquestionably the Germans have made a supreme effort to hasten construction by employing increased construction gangs, but it seems certain that shortage of structural materials must have a good deal more than out-balanced anything that could be done in this way.

All the materials for the Bagdad end of the line were being brought by ocean steamer up the Persian gulf to Bassorah, and there transshipped to the river boats for Bagdad.

At the time war started rails had been laid to Samara, about fifty miles north of Bagdad on the Tigris. Material on hand may have since made it possible to extend the line twenty miles farther up the river to Tekrit, but hardly beyond that point.

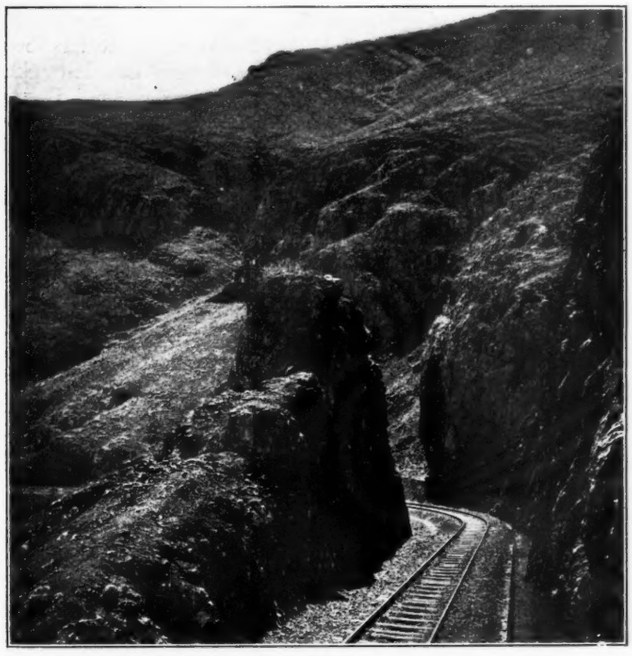
This would leave about 350 miles of construction remaining to complete the line to Mosul, on the site of old Nineveh, at which point the survey leaves the Tigris and runs almost due west to the Euphrates and Aleppo. If rail communication had been open to Constantinople and Europe, it is conceivable that construction could have been pushed from the western end rapidly enough to have brought railhead to Mosul by this time, from where materials could have been

Construction Work on the Bagdad Railway in the Taurus Mountains

rafted down the Tigris so that work could have been rushed simultaneously at a dozen points where the survey parallels the river. But with Constantinople cut off from Germany up to last Fall, and with the probability that the tunnels in the Taurus mountains are still far from being completed, it seems certain that the shortage of materials must have been felt almost as badly in the West as in the East. For here, also, ocean transport had been largely depended upon for heavy supplies, and these ceased abruptly with the closing of the Mediteranean to the ships of the Central Powers. So such construction as went on up to the first of this year must have utilized such material as was on hand at the outbreak of the war. At that time rails were laid from Aleppo to the Euphrates, the bridge across this river was practically complete, and a considerable mileage had been constructed across Mesopotamia. The country to be traversed by the railway between the Euphrates and the Tigris is somewhat broken, and the engineering will be similar to that in the non-mountainous portions of Montana and Wyoming, with considerable cutting and filling and a good many short bridges and culverts. This character of construction will predominate in the first hundred miles south of Mosul, after which the survey runs over a slightly undulating plain along the Tigris, where some protective work against floods was expected to be necessary.

Unless there were far larger accumulations of material on hand at Aleppo than there is any knowledge of on the outside, it is hard to understand how the western railhead at this time can be very much over half way from the Euphrates to the Tigris, say about Ras el Ain. And even if railway materials were being rushed through to Constantinople and across the Bosphorus immediately the way was cleared through the Balkans in November, the uncompleted tunnels in the Taurus would still have made it practically impossible to keep anything like an adequate supply moving on to railhead in Mesopotamia. The only thing that might lead one to believe that the Bagdad Railway had been pushed any distance beyond Ras el Ain is the rather remarkable number of troops the Turks were able to throw against the British at Ctesiphon, and the still more surprising numbers with which they have invested General Townsend's force at Kut el Amara and contested the advance of General Aylmer's relief expedition up the Tigris. If, through having had great reserves of structural material and by hard driving of the very poor laborers whom they have had to put up with, the Germans could have completed the line to Mosul, it is quite conceivable that the unexpected Turkish forces entrained to this point and were then rafted down the swift-flowing Tigris to Samara or Bagdad.

The section of the Bagdad Railway from Konia, in Asia Minor, to and through the Taurus and Amanus mountains and on to Aleppo has the eyes of the world upon it at this time from the fact that it is the most important link in the line of communications of the Turko-German army which has been concentrated in Northern Syria with the supposed design of invading Egypt and cutting the Suez Canal. Whether anything like a serious threat can be made against



A Complicated Section of the Bagdad Railway in the Taurus Mountains

Egypt, indeed, depends almost entirely upon whether or not the series of connecting railways extending from the Bosphorus through Asia Minor, Syria, and Palestine to the Sinai Peninsula can be made an adequate line of communication for an army of something like half a million men. Palestine and Syria are hardly able to feed their civilian population in ordinary times, much less so at times like the present when the production of foodstuffs has been brought to an unprecedently low level by the four years of nearly incessant wars that have held Turkey in their grip. This same circumstance has also cut down the food production of Asia Minor, so that an army operating against Egypt must be very largely fed, and entirely munitioned, from Europe. With

this fact in mind, the importance of the railway communications at once becomes evident.

Readers of an article on the railways of Palestine and Syria which the writer contributed to one of the numbers of the *Railway Age Gazette* last July may recall with what a heterogeneous system these provinces are served. Supplies for an army operating against Egypt must come through Asia Minor to Aleppo by the Bagdad Railway—or such of it as is complete—then switch to the French-built line, which would carry them via Rayak and over the Anti-Lebanon Mountains to Damascus, and then switch to the German-built Hedjaz Railway, over which they would move to the rim of the Sinai Desert and be transshipped to the light railways serving the rear of the army. It is to the "mixed" nature of this line of communications, and the fact that there is still a considerable break in it, that the best informed strategists believe that a sufficiently large army seriously to threaten the Suez Canal cannot be thrown over the Egyptian frontier.

In 1912 the writer met Meissner Pasha, the able German engineer who had built the Hedjaz Railway from Damascus to Medina and who was then getting preliminary work on the Bagdad Railway under way—and, among a number of other questions, asked him if he shared the belief attributed to the German Military Staff that a strong Turko-German force could be thrown across the Sinai Desert to the Suez Canal and perhaps to Cairo. Herr Meissner at that time held the opinion that an absolute *sine qua non* to the success of such a venture would be a double track railway all the way from the Bosphorus to Sinai. With no less facilities, he professed to believe, could the huge army necessary for such a task be adequately served. Although it has been reported that the Hedjaz Railway has been double-tracked south from Damascus to some point near the Sinai Desert, it is needless to say that this condition precedent has been far from realized. Indeed, on account of the still considerable break in the Taurus range, there is not yet—nor is there likely to be before next summer or fall—a through single track railway from the Bosphorus to Sinai. The fact that all shipments to Syria must be packed or trucked over a 7,500-foot pass, which is blocked from October to April with snow, makes it hard to see how anything like even adequate rolling stock and locomotives can have been assembled beyond the wall of the Taurus.

Although the construction work in the Taurus Mountains has lagged far behind that at any other point on the western portion of the Bagdad Railway—probably on account of the great amount of heavy cutting and filling in addition to the tunnels—the longest bore on the line is the Baghtche Tunnel, 75 miles east of Adana and 60 miles northwest of Aleppo report of the enterprising American Consul General of Constantinople, together with the other rock work in the Amanus in the Amanus Mountains. This tunnel, we know from the Mountains, was finished some time last summer.

"With the completion of this tunnel," reads the report, which bears the date of September 3, 1915, "one of the most serious difficulties connected with the construction of the Bagdad Railway has been overcome, and the work of connecting up many of the isolated stretches of track may be expected to be completed with reasonable rapidity. In spite of the delays caused by war, this most important undertaking in railroad construction in Turkey has passed the problematical stage and is now certain to become an accomplished fact in the near future."

The "Osmanischer Lloyd" gives the following technical description of this recently completed work in the Amanus Mountains:

"Leaving Mamoure, last station on the Bagdad Railway on the Cilician plain, the line begins, at the foot of the Amanus Mountains, to ascend, at an elevation of 394 feet, the slopes of these mountains, which are intercepted by ravines crossed by eight steel bridges and seven small tunnels, the latter having a total length of 6,355 feet. Thus it arrives at Baghtche station, situated at an altitude of 1,754 feet, near the entrance of the great tunnel which bears its name. Before reaching the mouth of the tunnel the line runs through two other tunnels, having a length of 236 and 394 feet respectively, and over a small bridge.

"The great tunnel has a length of 16,028 feet. For about 8,000 feet it ascends to 246 feet above the level of the entrance, and then begins to descend and emerges at the other end 197 feet above the level of the entrance. Between this point and Islahie station, which is still building, there are four more tunnels having a combined length of 3,500 feet. The total length of the tunnels it has been necessary to construct in crossing this range of mountains is therefore a little more than 26,250 feet.

"The great tunnel with its length of more than three miles, is the longest in Turkey. It is only excelled in length by the great tunnels in the Alps and elsewhere. Still, the technical difficulties which had to be overcome in piercing through have been just as great as those encountered in the Alps. In fact, for several hundred yards, the engineers encountered a rock of practically pure quartz, which was so hard that it was necessary to have recourse to boring machines of special construction."

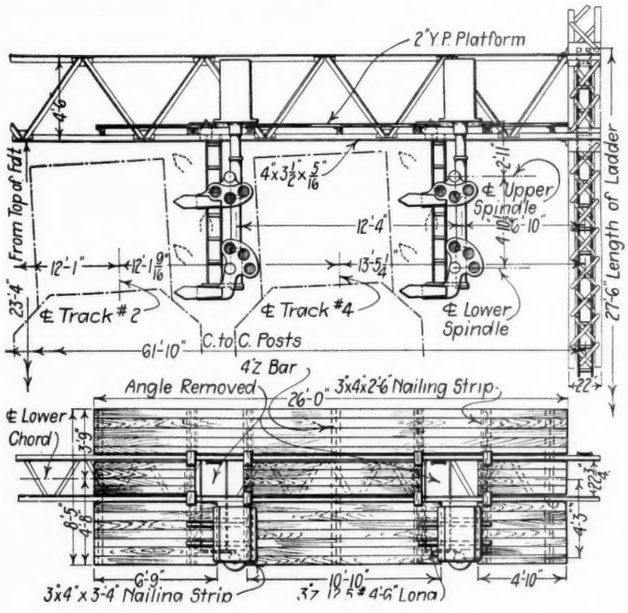
Upon the business future of the Bagdad or any other of the Turkish railways it is idle to speculate at this time. This, like the political future of the region which these lines serve, hinges upon the arbitrament of battle, and into whose control they will be given will not be known until the peace treaties are signed.

UPPER LEFT HAND QUADRANT SUSPENDED SIGNALS ON THE NEW HAVEN

The New York, New Haven & Hartford has plans well under way for a new signal system from Woodlawn Junction, New York, to New Haven, Conn., covering 60.52 miles of electrified line, New York division, four track. At present the line from Woodlawn Junction to Stamford, a distance of 21.29 miles, is equipped with the Coleman manual controlled system reconstructed for use in connection with a. c. 25-cycle, single-phase propulsion. From Stamford to New Haven, a distance of 39.23 miles, the present system is of the automatic, two-position, two-arm, all-a. c. type, designed for 25-cycle propulsion. The new system, which will displace both of the old, will, of course, be operated entirely by alternating current. The signals will be of the upper left-hand quadrant, three-position type, and arranged to display the aspects outlined in the Proceedings of the session of the American Railway Association, held in Chicago, November 17, 1915.

Energy for the entire system from New Haven to Woodlawn and also from New Haven north for a distance of 2½ miles and from New Rochelle to Harlem River, 12 miles, will be furnished from the signal power units located in the Cos Cob power house three miles west of Stamford. Under normal operation this energy is generated by a 450-kv. a., single-phase, 60-cycle alternator, driven by a 500-hp., 25-cycle motor. As an alternative in case of necessity, the signal system may be furnished with energy from two steam-driven, single-phase, 60-cycle, turbo-generators, which may be connected up and operated in parallel with each other, or in parallel with the motor-generator. All of these units generate current at a potential of 2,300 volts. There will be three transformers located at Cos Cob, each of 225-kv. a. capacity. Under normal operation one of these transformers will feed the system to the west, and one to the east, the third being held in reserve and so arranged that it may be connected in to feed either to the east or to the west. These transformers increase the voltage from 2,300 to 11,000 volts, at which potential the energy for the signal system will be transmitted along the right of way. The power transmission system consists of two pairs of transmission lines, one on the north side,

and one on the south side of the catenary system, and each pair of wires will be sectionalized and cross-connected at each interlocking station, so that the operators in the towers may de-energize between any two stations either the north feeders or the south feeders without interfering with the continuity of the signal power service. At each interlocking station and at each signal location there will be two step-down transformers with a ratio of 11,000 to 110 volts. One of these will be permanently connected to the north feeders, the other permanently connected to the south feeders. On the secondary side of these transformers there will be an automatic switch so arranged that under normal operation, the switch being energized, current will be fed to the 110-volt bus-bars through a pair of front contacts. If, however, this source of energy is cut off by the tower operators, the switch will automatically change to the bottom contacts and energize the signal system from the other pair of feeders. With the resumption of energy on the normal operating side the switch will automatically cut back to the front contacts. With this arrangement, obviously, it is possible to de-energize either the north feeders or the south feeders between any two towers with only a momentary interruption to the signal system.



One-Half of a Typical Catenary Bridge Showing Suspended Signals

All of the signals will be suspended from the catenary bridges, on account of the difficulty of securing a clear view of signals above the bridges through the overhead wires. The signal mechanism will be mounted on a platform attached to the lower chord of the catenary bridge, and from the under side of the mechanism case will be suspended the signal mast carrying the up and down rods for driving the spectacle castings. All signals are to be designed to give the upper left-hand quadrant, three-position aspects, and so located in relation to the track as to permit ample clearance for the top of the cars and pantagraphs of the electric locomotives, due consideration having been given to the elevation of the track at curves. All of the signals in connection with the interlockings will have two arms and vertical lights with the exception of the rear home or distant signal, which will be permissive and have two arms and staggered lights. Purely automatic signals will have but one arm and one light. Each signal arm will be driven by an individual signal mechanism operated by a single-phase, induction motor, and with a separate and fully independent set of contacts for the control of signal circuits. The signal mechanisms for signals on the same mast will be duplicates, except that the design will be for right-hand or left-hand operation. The signal masts will be carried to one side of the center line between tracks, in order to provide clearance for the signal arm, but the platforms and ladders will be suspended in the center of the inter-track space, so as to allow ample clearance for the signal attendant to get down to the signal lights without hazard from the pantographs of the electric locomotives. On account of the limited clearance between tracks it is absolutely necessary to use a short blade, the projection of which will be but 23 inches from the spectacle casting. This, however, is supplemented as viewed from the direction of traffic, as the blade will extend back under the first roundel, and, therefore, have the appearance of being longer than it is.

In connection with these signals a special semaphore lamp has been designed, which will to all intents and purposes, give a daytime light signal, thus eliminating the actual necessity of a signal blade. The roundels of the spectacle casting are 8⅜ in. in diameter. The new semaphore lamp designed for these signals is of special interest. The lamp itself is larger than the usual semaphore lamp, and is equipped with a parabolic silvered mirror reflector. In the center of this reflector is a bayonet socket to receive an incandescent bulb. Means are provided for the universal adjustment of the bulb in relation to the reflector. No consideration need be given to any focusing except in regard to the reflector as no lens is used with the lamp. The space usually occupied by the lens is taken by a plain curved glass, the convex surface of which is to the exterior so as to prevent the reflection of external lights. Current will be transmitted to these lamps at 70 volts in the daytime and 35 volts at night. Each lamp is equipped with an auto-transformer which cuts the voltage down to 7 volts in the daytime and to 3½ volts at night. The bulb to be used in this lamp is the equivalent of the General Electric Company's G-18½, 40-watt, 8-volt bulb, equipped with a spiral, horizontal filament. The roundels used in the spectacle casting are high-transmission glass designed by the Corning Glass Works. In actual test the light was plainly visible 2,800 ft. across a freight yard during a snowstorm in the daytime. The signal platform carrying the signals and space for the signal attendant is entirely encased in a wire screen to protect the attendant from accidentally coming in contact with the live wires of the propulsion system.

The new interlocking stations will be either of the all-electric or the electro-mechanical type. The towers will be of the New Haven standard design, a brick structure mounted on a concrete foundation and fireproof throughout. All of the electrical apparatus in connection with both the all-electric and the electro-mechanical plants will be entirely a. c. and will operate from transformers as described under the power system. The circuits used in connection with the electro-mechanical as well as the all-electric will be the typical type "F" layout with electric interlocking between signals and switches irrespective of mechanical locking in the machine. This is the arrangement adopted for standard practice by the New Haven.

Both high and dwarf signals will be of the electric motor type and automatically controlled. Approach locking, route locking and electric switch locking will be applied at each plant. In connection with the electro-mechanical plants, switch and lock movements will not be used, but facing point locks will be used for all switches; and at both the electric and the electro-mechanical interlocking plants the electric switch locking will be supplemented by detector bars on facing point switches located in the routes over which high-speed traffic is handled.

The only storage battery auxiliary equipment on the entire division will be at New Rochelle Junction, N. Y., and at Stamford, Conn. At New Rochelle Junction the existing battery plant of 55 cells of 2,380-ampere-hour battery will continue in service. This battery through a motor-generator is capable of furnishing alternating current for the entire signal system of the Harlem River branch for a period of

three hours. At Stamford there will be an auxiliary source of power consisting of a storage battery, motor-generator and automatic controlling equipment, so arranged that in case power is cut off of both the north and south feeders, the storage battery will automatically energize the motor-generator and furnish alternating current to the bus-bars supplying energy to the electric interlocking plant.

The entire work of this reconstruction will be executed by the signal department under the direction of C. H. Morrison, signal engineer.

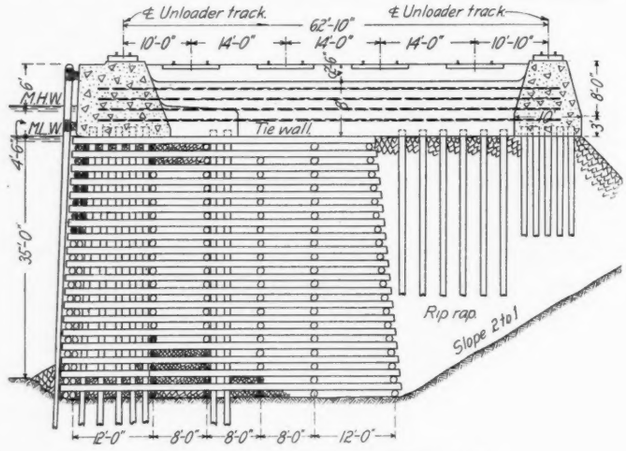
AN ORE DOCK FOR THE LEHIGH VALLEY IN NEW YORK HARBOR

The Lehigh Valley is now building an ore dock at Constable Hook in New York harbor, near the mouth of the Kill-Von-Kull, which is of interest because of the engineering features and the traffic arrangements involved. This dock is being provided to handle the shipments of iron ore coming from Chili for the Bethlehem Steel Company and other concerns. The construction of the dock involved the sinking of one of the longest sections of timber cribbing on record.

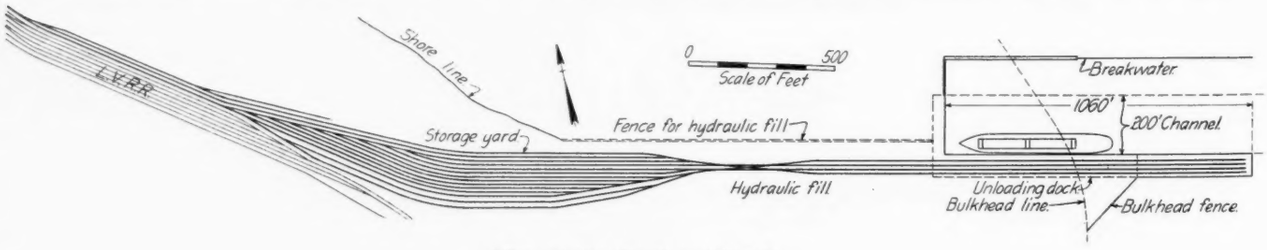
As seen on the accompanying map the track layout involved in this project is 4,500 ft. long and will consist of four loading tracks each 1,600 ft. long extending a distance of 1,050 ft. out onto the dock. These four tracks will be connected by a short two-track throat to a storage yard which will provide ten tracks of 20 cars capacity each for empty cars and other tracks for the disposal of the loaded cars as they leave the dock. The dock extends to the established pierhead line, 600 ft. beyond the line established for solid filling, or about 2,000 ft. beyond the existing mean low water shore line. It was necessary to dredge a slip 35 ft. deep and 200 ft. wide for the boats parallel and adjacent to the north side of the dock. This slip was connected to deep water in the bay by a channel of the same depth and width dredged for a distance of 4,000 ft. to a point near Baxter's Ledge at the head of Kill-Von-Kull. For the protection of both the pier and the slip it was necessary to build a breakwater 325 ft. north of and parallel to the pier. Across the head of the dock a bulkhead platform connects it with the breakwater. This consists of a concrete bulkhead supported on piles cut off at the low water mark. This bulkhead serves as an abutment for the hydraulic fill which was placed behind it to carry the tracks from the dock to solid ground.

The dock will carry four railway tracks placed 14 ft. center to center with a 2-ft. gage track on either side to carry the unloading tower, the center line of the 2-ft. gage tracks being 10 ft. from the center line of the adjacent outside railway tracks. For a distance of 400 ft. at the extreme end of the dock, pile trestle construction was used. The remaining 660 ft. is of reinforced concrete, supported on long foundation piles which are secured against lateral movement by a rock fill retained inside of a large timber crib. The concrete structure consists of two longitudinal side walls of concrete, continuous for the entire length of 660 ft. except for expansion joints at intervals of 36 ft. The wall on the channel side is the heavier of the two, being 9 ft. 8 in. wide at the top and 14 ft. wide at the bottom; the other wall is 5 ft. 6 in. wide at the top and 10 ft. wide at the bottom. These side walls are tied together at intervals of 36 ft. by concrete cross walls, and end walls reinforced to act as ties. Intermediate between these cross walls on the channel side are brace walls or buttresses extending back from the outside wall a distance of 10 ft. The outside concrete walls of the dock are 11 ft. high, with the bottom on a level with mean low water.

This concrete framework is supported on long piles driven to a close spacing under the side walls, cross walls, buttresses, etc. For a distance of 36 ft. at the outer end of this part of the dock the piles are enclosed by a timber crib for the full width of the dock. For the remaining 614 ft. the crib has a width of 51 ft. and lines up flush with the channel side of the pier. The crib is composed of cells with walls spaced 9 ft. center to center longitudinally and from 5 ft. 6 in. to 10 ft. center to center, transversely. These walls consist of tiers of round timbers alternately placed longitudinally and transversely. All the cells in the crib have been filled with rip-rap to a level two feet below the top of the concrete cross walls. This rip-rap also fills the space behind the timber crib, under the remainng portion of the dock to give support to the piles not enclosed in the cribbing. This filling extends to the outside edge of the rear longitudinal wall and slopes downward on a one to one slope. The railroad tracks will be supported on ballast placed on top of the rock filling. The unloading tracks will be supported on the two side walls of the dock.



Cross Section Through the Dock



Map of the Yard and Dock

The crib was assembled and sunk as one unit. Before sinking, a bed was prepared for it by dredging to a depth of 38 ft. below mean low water. The piles were driven after the cribbing had been sunk and when the rip-rap was in place, hydraulic filling was pumped into it.

The machinery installed for unloading the boats will consist of an unloader with a 15-ton capacity bucket to operate over the length of the crib portion of the pier and a 5-ton unloader which will also operate over the crib portion of the pier as well as the lighter constructed trestle portion on the outer end. The estimated capacity of the two unloaders is 12,000 tons per day.

Tests of a Consolidation Type Locomotive*

Some of the Results Obtained from Two Series Conducted at the University of Illinois Testing Plant

Two series of tests were recently made on a Consolidation type locomotive furnished by the Illinois Central, at the new locomotive testing laboratory of the University of Illinois, to determine the general performance of the locomotive as it was received from the road and after it had been placed in excellent condition. When the locomotive was received at the laboratory it had been in service 3⅓ years and had run

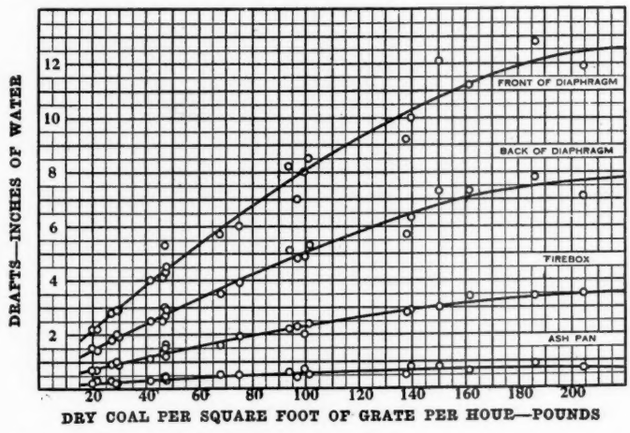


Fig. 1—The Relations Between Draft and Rate of Combustion

107,800 miles. It had been in service five weeks after having received general repairs; and was in good condition when it arrived at the laboratory. It was completely tested in this condition. It was then again overhauled, the valves were reset, the eccentric straps shimmed, the cylinders and valve chambers rebored, new pistons and piston rings, new valve bull rings and packing rings were applied, the rod packing

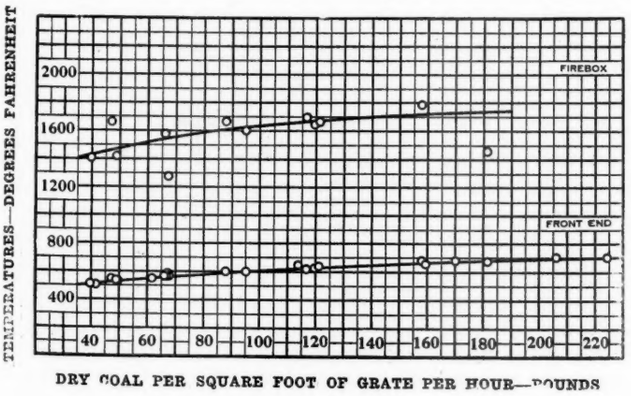


Fig. 2—The Relations Between Firebox and Front-End Temperatures and Rate of Combustion

was renewed, the exhaust nozzle tip was changed from 5¼ in. to 5⅞ in., and a small leak in one of the steam pipe joints was stopped. Following this work the locomotive was run the equivalent of about 1,200 miles in wearing down the cylinders and packing, before the second tests were made, the locomotive being considered in excellent condition.

*Abstracted from Bulletin No. 82 of the University of Illinois Engineering Experiment Station, describing laboratory tests of a Consolidation locomotive made by Edward C. Schmidt, professor of railway engineering; John M. Snodgrass, assistant professor of railway engineering, and Robert B. Keller, formerly first assistant engineering experiment station, Railway Engineering Department.

This locomotive is the characteristic freight locomotive of whose type there are about 20,000 in service on American railways. Its weight and heating surface exceeded the average values of these quantities for all Consolidation locomotives by about 25 per cent. The locomotive was worked during the tests throughout a range of speeds that corresponded to that which would ordinarily prevail in service. At each of the various speeds the cut-off was varied throughout as wide a range as the capacity of the boiler or the grate would permit. The adhesion between the drivers and supporting wheels in the laboratory is less, however, than the adhesion between the drivers and the rail on the road, and consequently it was impossible at slow speed to run at maximum cut-off. All tests were run with the throttle wide open. The methods employed in conducting the test and in deriving the results conform in general to those prescribed by the American Railway Master Mechanics' Association.

As the first series of tests was made principally to determine the condition of the locomotive as it was received from the road, a detailed discussion of the results obtained will

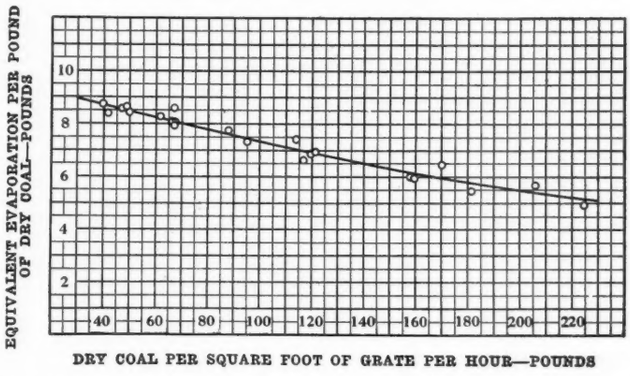


Fig. 3—The Relation Between Evaporation per Pound of Coal and Rate of Combustion

not be given. A comparison of these tests with the second series shows that, although the engine had been in service five weeks after it had received general repairs and at the end of that time it had been deemed advisable to make certain other repairs to place it in first class condition, but very little difference in the performance or the economical operation of the engine was apparent, wth the exception of the effect of the enlargement of the exhaust nozzle. The boiler performance was practically the same. There was an average improvement in the steam consumption of 4.1 per cent, which is justly credited to the increase in the size of the exhaust nozzle tip through its influence on the back pressure in the cylinder. The results of this comparison speak well for the condition of the locomotive as it was delivered from the shops, and show that the repairs that were made for the second series of tests might be considered as unnecessary under ordinary conditions. The reason for their being made at all was that nothing should be left undone which might improve the performance of the engine.

After the repairs had been made to the locomotive it was run, on the testing plant, an equivalent of 1,200 miles to break it in, before the second series of tests was started. Twenty-five tests were made in this series, of which 17 were of more than one hour's duration.

In considering the results of boiler performance, it should

be remembered that during the test the boiler was forced somewhat beyond the limit, which would ordinarily be maintained in service, so that the maximum test values of such measures of boiler activity as draft, rate of combustion and rate of evaporation are somewhat greater than the values which would be maintained on the road or for any except very short periods. The average boiler pressure varied during the tests of this series from 191.5 to 199.2 lb., and the feed water temperature ranged between 44.7 and 63.6 deg. The quality of the steam was high and nearly uniform throughout the series, the lowest quality being 0.984 and the highest 0.9963. The calorific value of the fuel varied between the limits of 10,487 and 11,660 B. t. u. per pound of coal as fired, and from 12,095 to 12,848 B. t. u. per pound of dry coal. The ash in the coal as fired varied from 9.64 to 13.96 per cent.

The relation between the draft values and the rate of combustion is indicated in Fig. 1. Inspection of the curve of firebox draft reveals close agreement between the values represented by the individual points and the average value represented by the curve. This fact may be accepted as an indication of the uniformity with which the fire was managed during the tests.

The temperature of the gases in the firebox varied between

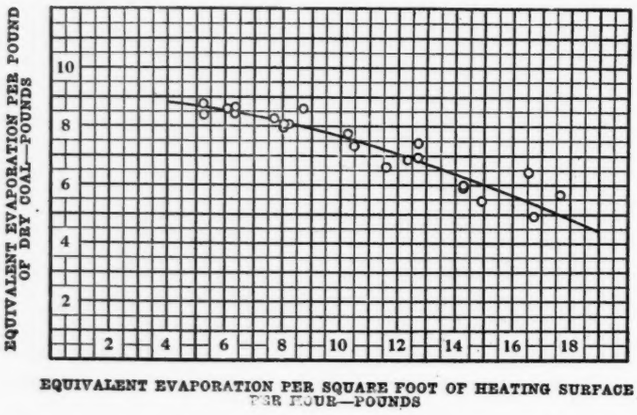


Fig. 4—The Relation Between Evaporation per Pound of Coal and Rate of Evaporation

1,267 and 1,785 deg. during the first 12 tests of this series. The relation of this temperature to the rate of combustion is exhibited by the upper curve of Fig. 2. The temperature of the gases in the front end ranged between 506 and 702 deg. and increased very regularly as the activity of the grate and of the heating surface was increased. The relation of front end temperature to rate of combustion appears in the lower curve of Fig. 2.

The rate of firing ranged from 1,975 lb. to 11,127 lb. of dry coal per hour. The rate of combustion varied between 39.9 and 224.5 lb. of dry coal per square foot of grate per hour. The equivalent evaporation per hour varied between the limits of 17,277 and 57,954 lb. The equivalent evaporation per square foot of heating surface per hour varied in this series from 5.26 lb. to 17.65 lb.

The equivalent evaporation per pound of dry coal ranged from a minimum of 4.94 to a maximum of 8.75 lb. This range represents as good a performance as would be expected from the grade of coal used. The rate of this decrease in evaporation per pound of dry coal is shown in Figs. 3 and 4, the former showing the decrease with respect to increase in the rate of combustion, and the latter with respect to increase in the rate of evaporation.

The largest ratio of the heat absorbed by the boiler to the heat contained in the coal in the condition in which it was supplied to the fire was 67.61 per cent, and this was obtained with a rate of combustion of 67.3 lb. of dry coal per square foot of grate per hour. The minimum efficiency was 38.77 per cent. This was obtained in the test in which the highest rate of combustion prevailed, namely, 224.5 lb. of dry coal per square foot of grate per hour.

The nominal speeds at which the locomotive was operated were 10, 20, 30 and 40 m. p. h. The nominal cut-offs at which the locomotive was operated were 16, 24, 32, 40, 48 and 56 per cent of the stroke. In the discussion which follows relative to engine and general performance, speed and cut-off are referred to in terms of the nominal values. All points plotted upon the figures are, however, located with regard to the actual speed and cut-off as determined from test data. Fig. 5 presents the relation between dry steam per indicated horse power hour and speed. No curve is drawn for 56 per cent cut-off, since only one test was made at that cut-off. The minimum water-rate was 27.17 lb. of dry steam, and occurred at a speed of 30 m. p. h. and 32 per cent cut-off. The maximum water rate was 31.53 lb. of dry steam, and occurred at a speed of 10 m. p. h. and 24 per cent cut-off.

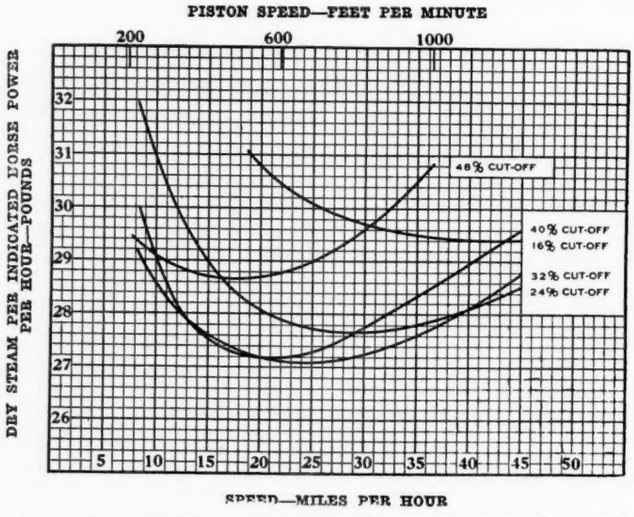


Fig. 5—The Relation Between Steam Consumption and Speed, at Various Cut-Offs

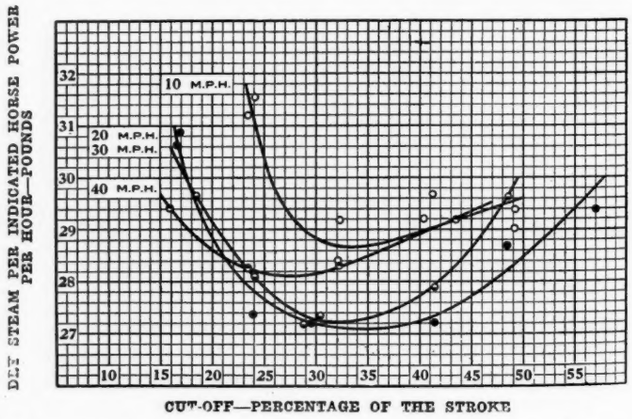


Fig. 6—The Relation Between Steam Consumption and Cut-off, at Various Speeds

The difference between the minimum and maximum water rates for all tests was only 4.36 lb. of dry steam. The corresponding differences between minimum and maximum rates at a given cut-off are in general much smaller. The tests at both short and long cut-off show comparatively high water rates. The best performance is shown by the curve for tests at 32 per cent cut-off.

Fig. 6 presents curves showing the dry steam consumed

per indicated horse power per hour in its relation to cut-off. A curve is shown for each of the four nominal speeds at which tests were made—10, 20, 30 and 40 m. p. h. Except during short periods at starting and on heavy grades, the speed of this locomotive in service would probably vary between about 15 and 35 m. p. h., and the cut-off would range from say 50 to 20 per cent. Under these conditions of speed and cut-off the steam consumption varies between approximately 27 and 29 lb. of steam per indicated horse power per hour. It is probable that this range fairly represents the general average water rate for a very considerable number of freight locomotives in service.

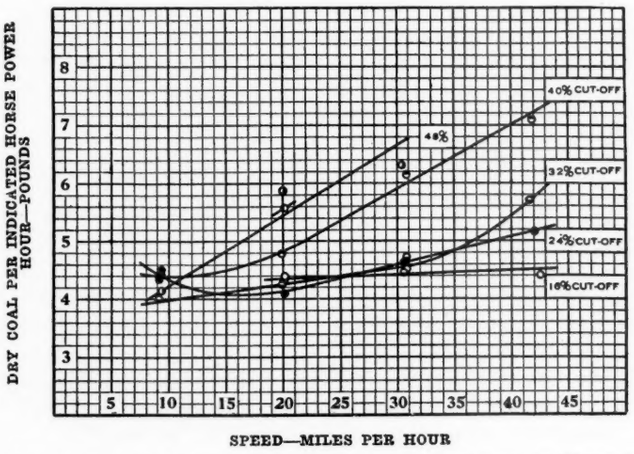


Fig. 7—The Relation Between Coal Consumed per Indicated Horsepower Hour and Speed, at Various Cut-offs

The maximum indicated horse power was developed at a speed of 30 m. p. h. and at 48 per cent cut-off. The lowest was 450.5 indicated horse power while running at 10 m. p. h. with 24 per cent cut-off. The dry steam supplied to the engines per hour when developing 1,633.5 indicated horse power was 48,387 lb. The moist steam delivered to the engines for the same test was 48,812 lb. per hour.

The range in machine friction is, for the entire series, from 70 to 242.7 horse power. These values were obtained in tests during which 456.0 and 1,457.3 indicated horse power, respectively, were developed. Expressed as per cent of the indicated horse power developed, the minimum machine friction was 10.2 per cent and the maximum was 21.9 per cent. The former test was at 20 m. p. h. and 40 per cent cut-off, developing 1,233.8 indicated horse power, and the latter test at 20 m. p. h. and 16 per cent cut-off, developing 560.3 indicated horse power.

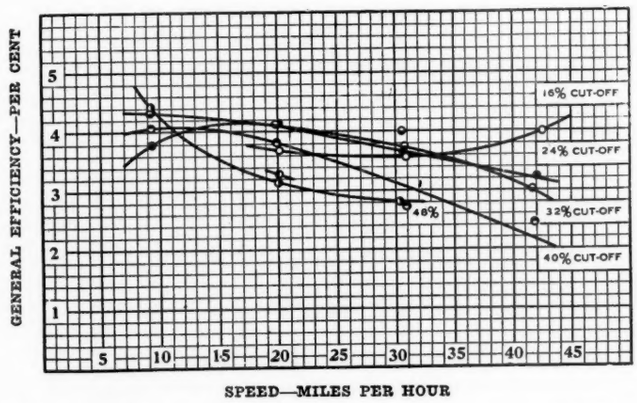


Fig. 8—The Relation Between General Efficiency and Speed, at Various Cut-offs

The curves of Fig. 7 show the relation between speed and the amount of dry coal consumed per indicated horse power per hour. Each of the curves there drawn applies to a particular cut-off. The most economical performance was obtained at a speed of 10 m. p. h. and at 32 per cent cut-off. During this test 4.00 lb. and 4.62 lb. of dry coal per indicated horse power hour and per drawbar horse power, respectively, were used. The highest coal rate occurred in a test made at a speed of 40 m. p. h. and at 40 per cent cut-off, during which 7.10 lb. and 8.38 lb. of dry coal per indicated horse power hour and per drawbar horse power hour, respectively, were used. Both figures show a more rapid increase in coal consumption with increase of speed at long cut-off than with increase of speed at short cut-off. The curves show that the economy was fairly constant, or increased slowly as the speed was increased from 10 to 20 m. p. h. Tests at 24 per cent cut-off show an economy apparently better at 15 to 20 m. p. h. than at 10 m. p. h. As speed increased above 20 m. p. h. the coal consumption increased more rapidly than at lower speeds, with the exception of the tests made at 16 per cent cut-off.

General efficiency* and its relation to speed are shown in Fig. 8, in which a separate curve is presented for each nominal cut-off. The maximum efficiency obtained was 4.44 per cent, at a speed of 10 m. p. h. with 48 per cent cut-off, while developing 804.9 indicated horse power. The minimum efficiency obtained was 2.46 per cent, at a speed of 40 m. p. h. with 40 per cent cut-off, while developing 1,559.9 indicated horse power. Collectively the curves indicate a fairly constant efficiency of about 4 per cent, for speeds from 10 to 20 m. p. h. As the speed increases above 20 m. p. h. the efficiency decreases from about 4 per cent to about 3 per cent.

The following are the general dimensions of the locomotive:

General Data

Gage	4 ft. 8½ in.
Service	Freight
Fuel	Bit. coal
Tractive effort	40,470 lb.
Weight in working order	223,000 lb.
Weight on drivers	200,900 lb.
Weight on leading truck	22,100 lb.
Weight of engine and tender in working order	358,000 lb.
Wheel base, driving	17 ft.
Wheel base, total	25 ft. 8 in.

Ratios

Weight on drivers ÷ tractive effort	4.96
Total weight ÷ tractive effort	5.51
Tractive effort × diam. drivers ÷ equivalent heating surface*	751.8
Total heating surface ÷ grate area	66.26
Firebox heating surface ÷ total heating surface, per cent	5.13
Tube heating surface ÷ firebox heating surface	18.41
Weight on drivers ÷ total heating surface	61.19
Total weight ÷ total heating surface	67.92
Volume both cylinders	13.20 cu. ft.
Total heating surface ÷ vol. cylinders	248.8
Grate area ÷ vol. cylinders	3.76

Cylinders

Kind	Simple
Diameter and stroke	22 in. by 30 in.

Valves

Kind	Piston
Diameter	12 in.
Greatest travel	6 in.
Lead in full gear	1/32 in.

Wheels

Driving, diameter over tires	61 in.
Driving journals, main, diameter and length	10 in. by 12 in.
Driving journals, others, diameter and length	9 in. by 12 in.
Engine truck wheels, diameter	33½ in.
Engine truck, journals	6 in. x 10 in.

Boiler

Style	Straight
Working pressure	200 lb. per sq. in.
Outside diameter of first ring	80 in.
Firebox, length and width	108¼ in. by 66⅛ in.
Firebox plates, thickness	⅜ in.
Tubes, number and outside diameter	413—2 in.
Tubes, length	16 ft. 3 in.
Heating surface, tubes (fire side)	3,094 sq. ft.
Heating surface, firebox (fire side)	168 sq. ft.
Heating surface, total (fire side)	3,283 sq. ft.
Grate area	49.55 sq. ft.
Smokestack, height above rail	16 ft. 1½ in.
Center of boiler above rail	9 ft. 11 in.

*By general efficiency is meant, in this connection, the ratio of the heat equivalent of the work done at the locomotive drawbar to the heat content of the coal. This ratio is a measure of the economic performance of the locomotive as a whole.

THE POST OFFICE DISCUSSION IN CONGRESS

By W. L. Stoddard

Washington, March 9.

Representative David J. Lewis, of Maryland, says that in the long run the railroads will be losers by the amendment to the post office appropriation bill limiting the weight of parcels sent by mail to fifty pounds; and Mr. Lewis is a man of influence here. He was one of the authors of the original parcel post law. The amendment in question was adopted by the House last week by a vote of 179 to 139, the vote following a lively debate. The radical parcel post people, of whom Lewis and Postmaster General Burleson may be considered leaders, were surprised by the unheralded inclusion of this provision in the post office appropriation bill, and their eleventh hour attempt to rally their forces did not succeed.

Mr. Lewis says that the administration forces which are opposed to the 50-pound limitation will carry their fight into the Senate. Already a mass of publicity matter has been prepared to send out to granges and other organizations with a view to arousing these institutions to defeat the undesired section.

Mr. Lewis bases his opinion on an estimate that the railways at the present time receive about 6 cents a ton mile for parcel post matter, or about what they receive for express matter. "I do not think," he says, "that 6 cents a ton mile is enough for mail matter of the first, second and third classes. It should be 10 cents. But for parcel post 6 cents on the sliding scale is about right. It is probable that the railroads would get as much compensation with a 100-pound parcel post limit as they get today, for they could save on number of cars. In New England and in the northeast territory generally the railroad companies are receiving less from the express companies than they receive from the government. The railways would gain by an extension of the parcel post."

"Then there is the question of farm products by parcel post. . . . The express companies are under certain limitations, limitations which it is economically impossible for them to remove. They can not reach the farms of the country. Some 25,000,000 people live on the farms, away from the reach of the express service. We are actually maintaining a million miles of rural routes over which the postal service can conduct this transportation, and no other human agency could do it within the limits of economic policy. To fix a weight limit of this kind or any limit upon the rational, gradual, careful development of this parcel post service up to the limit that other countries enjoy is to say to the farmer, to say to the country merchant, 'You are never to have a parcel post like that enjoyed in other countries, and, moreover, you are never to have an express service, either.' "

These views are presented with neither endorsement nor criticism, but solely for the reason that they are the views of a member of Congress who admittedly is in a peculiarly strategic and important position when it comes to parcel post matters. Lewis has the confidence of literally scores of his colleagues in the House and Senate, and he is apparently the Postmaster General's chief adviser on parcel post. His opinions have at least as much weight in Washington as those of any other one man, and probably they have more. For years Lewis has made parcel post his special study and in his political campaigns it has been his chief issue.

The battle over the 50-pound limit amendment has now been carried to the Senate, and it is impossible to guess what will be the outcome. One thing, however, is practically certain—that the discussion will be "loud and frequent," for already senators are beginning to hear from the country, and with the country, it is needless to say, the parcel post is popular.

Those in both Senate and House who are opposing the 50-pound limitation are arguing that Congress should relinquish the rate-making power which the adoption of the amendment would indirectly assert, leaving this function to the Post Office and the Interstate Commerce Commission, as was intended by the terms of the act creating the parcel post system. On this point there is, as is well known, considerable controversy. Mr. Lewis, controverting the view that the commission has no jurisdiction in the matter of reasonableness of postal rates, says that the statute makes all changes in parcel post rates subject to the approval of the Interstate Commerce Commission.

In the varied views now prevailing we have all the elements for a first class legislative row, the precipitation of which may be expected at any time. It may be worth while to recall that that provision of the statute creating the parcel post which apparently gives the making of parcel post rates to the Post Office Department and the Interstate Commerce Commission, has before now been attacked in the Senate. At one time a bill to clear up all doubts by repealing the disputed clause was introduced and reported favorably from the Senate post office committee. Senators on both sides of the chamber were friendly to this bill, and the question then raised and again, seemingly, to be raised when the post office appropriation bill comes up, is one in which party lines are forgotten.

In general it is probably safe to say that the tendency is all in the direction of leaving the determination of rates and "conditions of mailability," which means classifications, and so on, to the executive rather than to the legislative department of the government, but that there is important and determined opposition to this principle must not be overlooked, regardless of the merits of the case.

MULTIPLATE VALVES

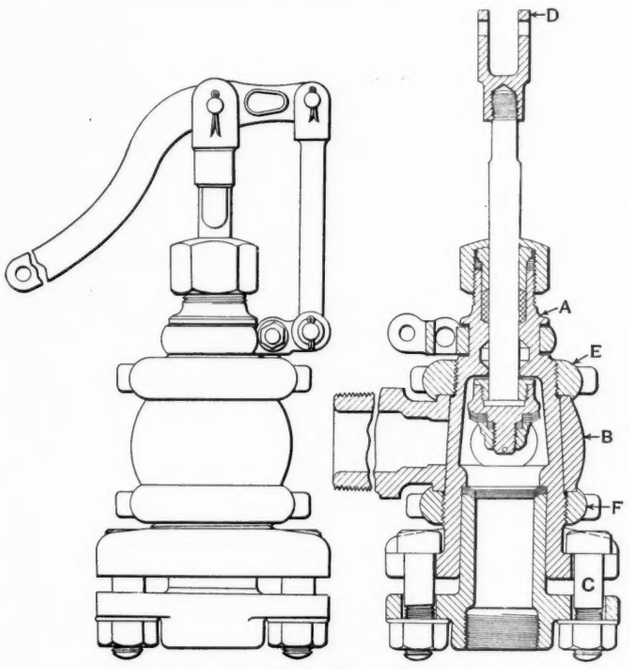
In the development of a general policy of fuel economy, that wasted through leaky valves should be given consideration as well as that lost in other ways. Steam valves of various types are often allowed to remain in a leaky condition with a resultant fuel waste because of lack of time to regrind them, or from the lack of proper facilities.

The O'Malley-Beare Valve Company, Chicago, realizing the need of a valve that can easily and quickly be made steam-tight by even an inexperienced workman, has developed the Multiplate valve. Its general construction is substantially the same as that ordinarily used, with the exception that the valve head and the valve seat are made up of several uniform superimposed metal plates held in place with suitable retaining nuts. As the valve wears and begins to leak, the bonnet is removed and a plate from both the seat and the head is discarded from the magazine of plates in the valve. The bonnet is then replaced, the valve being in the same condition as when new. As the plates are used they may be replaced by new ones. In case there are none at hand the valves can be used without them, the master seats in the valves being properly machined for this purpose. The thickness of the plates represents the amount of metal that is ground off the heads and seats of valves of other types when it is necessary to repair them for leakage.

An interesting feature of these valves is that the parts are interchangeable with valves of other makes; that is, the bonnet of the O'Malley-Beare valve can be applied to the body of numerous other makes. Multiplate valves of all types for all classes of service are made by this company. The composition of the plate used in the seat and head varies for the service in which it is used. Brass plates are provided for saturated steam valves, composition nickel and Monel plates are provided for superheated steam valves, and a plate of special mixture is provided for the thinner gases, such as oxygen and acetylene. The plates generally used are bevel

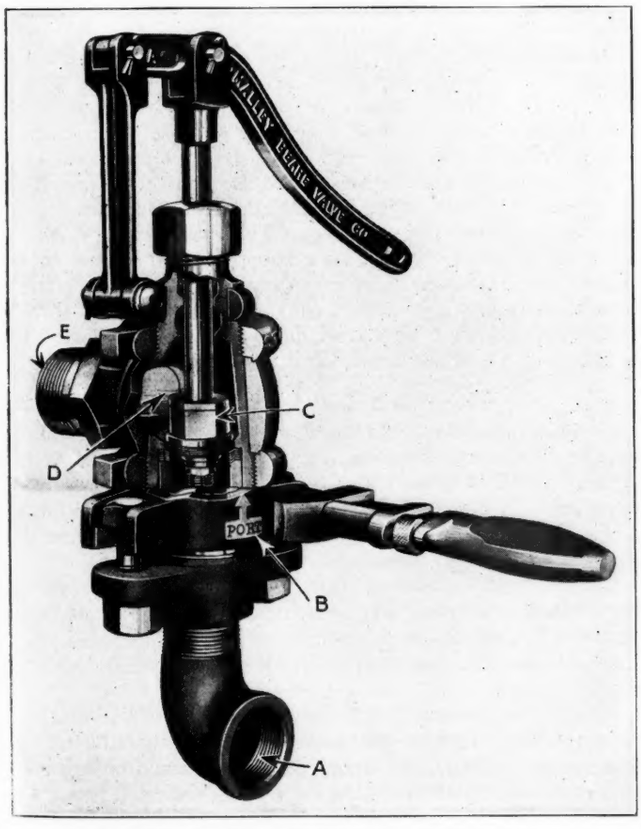
in form but in check valves, and in other valves where suitable, flate plates are used.

In addition to the medium and extra heavy valves, this



Duplex Multiplate Blow-Off Valve

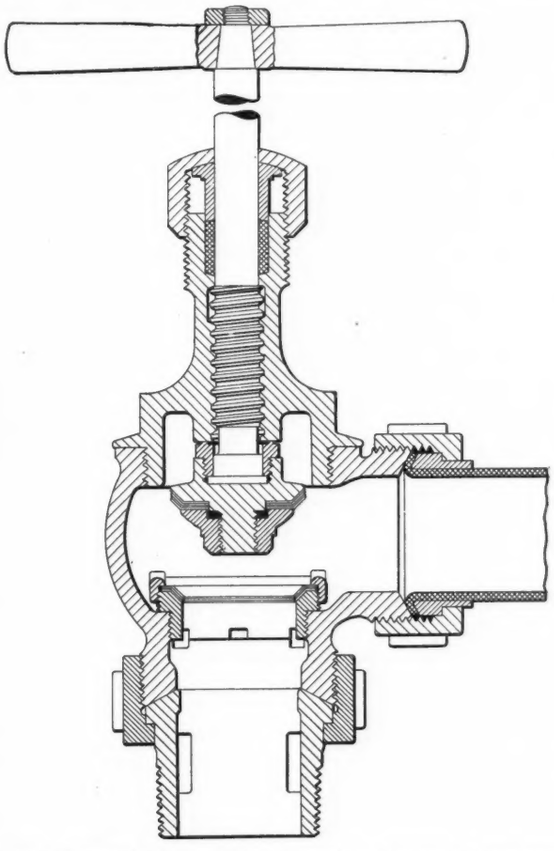
company makes a Duplex Multiplate blow-off valve that is especially adapted to locomotive service. It is so constructed that the valve seat and the valve head can be removed for



O'Malley-Beare Multiplate Blow-Off Valve

A—Outlet; B—Arrow Indicating Port Position; C—Service Valve; D—Port; E—Pressure Inlet. The monkey wrench is shown in position for cutting the valve out of service.

repairs with the boiler under pressure. The construction of this valve is shown in the drawing. The valve body *A* has a steam tight taper fit in the outer casing *B*. An opening in the valve body when placed in line with the boiler connection cuts in the valve. By turning the valve body around 90 deg. the valve is cut out and at this time the valve seat and head can be removed. The valve seat is removed by releasing the seat bolts *C*, and the valve head is removed by removing the handle of the valve and the clevis *D*, and pushing the valve stem down through the valve. Notations are



Injector Fountain Stop Valve Showing General Arrangement of the O'Malley-Beare Valves

cast in the outer casing and in the exposed part of the valve casing to show the position of the port in the valve body with respect to the boiler connection. The valve body is held in the outer casing by the adjusting ring *E* and the lock ring *F*. If after long service the valve body should stick in the casing when it is desired to cut out the valve, it can be relieved by a slight adjustment of these nuts. The same general principle is followed in the application of the valve plates in this valve as in the other types of valves.

WEIGHT OF OIL.—The lightest oil used for lubrication has a specific gravity of about 0.865 and the heaviest about 0.930. The commercial range is from 0.885 to 0.907.—*Power.*

RAILWAY DEVELOPMENT IN POLAND.—In a note appearing in a Petrograd paper on what the Germans are doing in Poland, it is stated that at Vlotzlavka work has been begun in the construction of a railway bridge across the Vistula, and on a railroad running from Vlotzlavka to Lipno-Plotzk. Traffic on the new railway from Travnik through Krasnotaff, Izbitzu, Zamocs, Tomasheff and Bielzhetz to Lemberg will, it is expected, be shortly opened. Direct communication between Warsaw and Dantzig, through Mlava, the previously important custom house station on the Russo-German frontier is now established.

Hearing on Freight Congestion in the East

A Statement by Shippers and Railroad Officers of the Freight Car Situation at the Eastern Seaboard

On Monday and Tuesday of this week the Interstate Commerce Commission held an informal hearing in Washington in regard to the freight car situation as it is affected by the extraordinarily heavy business being done by the railroads terminating at Boston, New York, Philadelphia and Baltimore. Chairman McChord, in opening the hearing, made the following statement:

For several months and from various sources, including informal complaints, the commission's attention has been directed to the congestion of freight at the eastern terminals of the trunk line railroads, of which the most important are Boston, New York, Philadelphia and Baltimore. It is a matter of common knowledge that the congested conditions grew worse and that the railroads have resorted somewhat freely to the use of embargoes against freight in order to avoid a hopeless blockade.

The commission is not vested with any jurisdiction or powers relating to the physical handling of the traffic, operation of the road, or providing terminal facilities. It has nevertheless undertaken to keep itself advised as to the situation referred to and had some of its examiners look into the matter on the ground in December. It followed this up by further similar inquiry in January, at which time it appeared that some progress had been made in more expeditious handling of freight, but still the condition was extremely bad. The existing terminal facilities would doubtless be taxed to their utmost with the volume of export, coastwise and domestic freight which for several months has been and still is being offered even if the ordinary number of vessels for export and coastwise freight had been available. It is generally conceded that this unusual volume of export freight and the unusual shortage of vessels are largely, if not wholly, due to conditions growing out of the European war.

It has been suggested in some quarters that the commission should take hold of this situation and straighten it out, but presumably the authors of such suggestions were unacquainted with or had momentarily overlooked the limitations upon the powers vested in the commission. Various representatives of the interested railroads have suggested that the commission should deal with the situation by authorizing them to file and make effective on less than statutory notice tariffs providing for storage and demurrage charges far in excess of any that have, so far as we are advised, ever before been proposed. The commission declined one such request, not alone because of the extraordinary increase in charges proposed, but because of further proposals to withdraw arrangements voluntarily established and long maintained by the railroads and to which a great volume of business has been adapted, and to inaugurate storage charges which the shippers would be required to pay even though they might not be in any degree responsible for the delay to the freight.

Somewhat similar suggestions have recently been renewed, and the commission has arranged this conference for the purpose of providing an opportunity for both carriers and shippers to present any suggestions they desire to offer with regard to the congestion and appropriate means for relieving it, temporarily or permanently, through changes in tariffs or otherwise.

The situation involves not alone inconvenience to the roads operating or reaching the congested terminals and to the consignors and consignees of the freight there congested; its effect is countrywide, and western railroads are unable to properly serve their local patrons because of the extent to which their cars are detained either at these congested terminals or on the lines of the eastern roads. The commission has received informal complaints from some western railroads that their lines are practically stripped of box car equipment, and that the release of their cars at the congested terminals has not afforded them relief because their cars sent west empty from the congested district are stopped at Chicago or points east thereof and again loaded eastward, in turn to contribute their share to further congestion at the seaboard.

Although it may be assumed that the railway officers have done what appeared to them best in their efforts to deal day by day with these unusual conditions and to relieve the congestion, it has been asserted that frequent changes in the embargoes that have been declared have operated to the advantage of one shipper over another. We have, however, no allegations that any such preference has purposely been given to any particular shipper.

It is clearly the duty of railroads to utilize their facilities and equipment to the fullest extent, especially in times like this, and it is equally the duty of every shipper to contribute his share to a proper utilization of the equipment and facilities. The fact that an unprecedented volume of freight may offer for movement in the eastern territory and to these ports should not be permitted to operate to prevent shippers in the west from securing services, nor to strip the western roads of their equipment.

The uncertainty of securing vessel space for export shipment is appreciated; at the same time freight should not be shipped and hauled to these overtaxed terminals far in excess of the reasonable possibilities of disposing of it, especially when that is done at the expense of inconvenience and loss to the railroads that are thus deprived of their equipment and the patrons who are dependent upon such roads for their daily needs. The commission hopes that helpful suggestions may be here presented, and that there may be co-operation between carriers and shippers and receivers of freight in efforts along right lines to ameliorate as speedily as possible the present situation, which is, and apparently for some time may be, extremely troublesome. The commission further expresses the hope that all suggestions will be offered in a broad spirit of mutual helpfulness and as far as possible free from a spirit of self-interest.

Howard Elliott, president of the New York, New Haven & Hartford, made the following statement:

Statement of Howard Elliott

On December 28 I addressed a general letter to the Interstate Commerce Commission and to the state commissions of New York, Connecticut, Rhode Island and Massachusetts, pointing out to those regulating bodies the seriousness of the situation confronting the New Haven in its effort to perform its full duty as a carrier.

Since then the conditions in our territory have grown more burdensome, and there has been increasing difficulty on the part of the company in doing all that the business men, the shippers and manufacturers in its territory desired to have done.

It has often been said that the New Haven is like a great terminal yard, because we have so many manufacturing plants near at hand, so many congested communities, and such a dense population, that it results in almost one continuous freight yard over a number of parts of the system.

As a result of that condition, freight has been coming into New England, into this great terminal yard, with more rapid-

ity than it has been disposed of. Today we have cars at terminals awaiting to be moved to another terminal, 24,615. We have cars set out on the main lines between terminals, because of the inability to store them at terminals, 4,452, making a total of 29,067 cars Saturday morning awaiting movement.

We have cars at the terminals awaiting the ability of the owner of the freight to unload them, 15,102. We have cars at terminals being loaded, 3,517, a total of 47,686 awaiting disposition. Our connecting lines, so far as we have immediate advices, have at least 13,000 cars now under load waiting to come into New England, making a grand total of 60,686 cars. That is probably from 33⅓ to 50 per cent in excess of the business which the company was doing a year ago, and at least 25 per cent in excess of any business that it ever before had in sight or attempted to carry on.

As a result of this large volume of cars coming in the comparison of the total number of freight cars on the railroad at the last count compares in years as follows: This year, 57,000 cars; 1915, 39,000 cars; 1914, 40,000 cars.

The New Haven has of its cars on foreign rails in round figures 20,000 cars, and has cars of foreign roads on its rails, in round figures, 42,000 cars.

That is our condition today, and it is a very serious one to the successful conduct of further business, and even more serious in its effect on the New Haven. So the New Haven has every reason, apart from its duty to do all it can to serve its territory, to do what it can to cure it, because of the great expense of doing business under such conditions.

As to the causes for this there are of course various reasons that can be advanced. I have said that the New Haven was likened by some to a great terminal yard. An example that I think even more pertinent is to say that it is like a great hotel, and that every room in that hotel is practically occupied; the guests in the hotel are in the rooms, and no more guests can be taken in by the hotel proprietor until some leave their rooms. In our case our guests are cars. No more cars can be taken on until we can have those now on hand released and sent away, and even if we have some vacant rooms in the back part of our hotel, at more or less unimportant points, they are of little avail because it is very difficult to reach that part of the road, the entrances to the road being blocked at our junction points with foreign lines, and the porch of the hotel and the hallways are full of people trying to get in.

That is one of our difficulties. We cannot take more people in until we can get some out. In our effort to serve the people of New England we perhaps have been too enthusiastic, and allowed more to come in than it was within our power to handle.

Why that is, as I say, every man must have his own diagnosis. It has been generally stated that the so-called war munitions business was one of the great fundamental causes for the difficulties in the territory occupied by the New Haven. In a limited portion of that territory it is true that the so-called war munitions business has been a very strongly contributing factor to the difficulty.

But to my mind the cause, in our territory at least, is somewhat deeper than that. The whole country for several years has been on a somewhat quiet level of business. In fact we all know that there was what we might call a serious periodical depression of business a few years ago, and nearly everybody was careful about expenditures, about methods, and there was curtailment going on. The country gradually emerged from that condition; the war no doubt was a stimulating factor, and may have hastened that emergence. But they did emerge from that position, and one business after another has gradually been finding that it has had increasing orders, not alone because of the war, but because the country as a whole was finding that it needed all kinds of goods; its storehouses were being depleted, its buying power was being increased, and they started in to buy.

That starting in to buy, of a great people, a hundred million strong, with great purchasing power, has been going on for some time, so that in the manufacturing districts of New England, not only has the so-called war munition business been active, but nearly every other kind of manufacturing business has been increasing and increasing.

For example, in the month of November, before the great storms of December, which crippled the railroad somewhat, the New Haven did the largest volume of freight business, measured by ton miles, in its history. It handled 280,000,000 tons of freight one mile, which was far and away the greatest ever performed on that railroad. And even at that time the facilities of the company were becoming congested.

Then a very serious storm came, December 13, which seriously crippled the company for ten days, and later there were storms on, I think, December 26 and December 30.

This enormous volume of business in November, and a volume for the first week in December that far exceeded the large volume in November, was poured in upon the company under very difficult physical conditions. And the company has struggled with its facilities ever since and under unusual (that is, unusual for that territory) weather conditions, to accomplish the desired results.

Another thing that has embarrassed New England in the operation of its railroads, and to a certain extent has embarrassed the dealers, has been the rather difficult coal situation. As you all know there has been much discussion about the possibilities of there being a suspension of coal mining during the spring. Railways and others, naturally trying to take precautions against not having sufficient fuel, have done all they could to secure an increased supply of fuel, and have attempted by all-rail and by vessel to bring coal into New England.

The New Haven alone put, I think, some 70 vessels into the coal trade—mobilized a fleet of that number—in order to try to protect itself because of the difficulties under which many roads were suffering in moving coal promptly all-rail. That helped to produce a congestion in coal.

Another reason to my mind is this, that, on account of the depression in business, some at least of the railroads and the shippers have perhaps not been as active as they should in adding to their facilities.

The chairman spoke about the responsibility of shippers, and about long continued practices under which commercial business has grown up.

I think it is fair to say that the railways in their very natural desire to serve the public to the best of their ability have developed a system of fast freight, and in the main of reasonable prompt delivery of freight, so that a custom has grown up, and in my own railroad experience it seems to have been a growing habit, for the shipper to depend more and more on getting his supply of materials day by day from some central point, instead of perhaps having a larger supply on hand at various points that would protect him and his customers from just such emergencies as this.

The shippers in our territory have contributed in every way by receptive efforts in trying to cure the present difficult situation, but it is a fact that from one cause and another the shipper, or rather the receiver of freight, has not always sufficient power either in men or auto trucks, or in teams or in warehouses, or in private side tracks, to handle all of the business that he, the receiver of the freight, has ordered to protect his own trade.

A man will buy or order five cars of some material, for the very proper purpose of protecting his trade, and yet he may not have the facilities to handle promptly more than two. In one case there were 200 cars of fuel bought by

those who thought they could make a profit by handling it, and it stood around for days waiting to get a purchaser.

In certain lines there have been very large quantities of raw materials bought, not for immediate use, but for the very proper purpose of protecting the trade. The result is this congestion, and the railroad is not entirely to blame, the shipper is not entirely to blame—I think we are all perhaps to blame somewhat, because of the great uplift in business coming more rapidly than many of us believed it would come.

On the New Haven we had no very marked evidence of the improvement in business until along in June and July. Then there began to be some little indication of a growth of business more rapid than theretofore. As the commission also knows better than any one else, in the case of the New Haven there have been peculiar contributing causes that have made it more difficult in the case of that road to add to its facilities with the rapidity with which we would have liked to add.

And yet I want to call your attention to the fact that in an effort to add to the facilities of the company there have been very large sums of money spent, not enough as it has turned out to provide for the present emergency; but during the period from July 1, 1903, to December 31, 1914, there was $224,200,000 spent on the New York, New Haven & Hartford rail system, including its terminals, for capital additions and improvements. Since then we have spent very considerable sums in spite of the difficulties through which the company has been passing. For the fiscal year ending June 30, 1914, we spent $7,618,000 for additions and improvements, and for the fiscal year of 1915, $3,274,000, or a total of $10,892,000. That was in the midst of rather distressing and difficult situations.

From the first of September, 1913, up to now the company has either bought or received or contracted for new equipment at an aggregate cost that will total $10,500,000 in those two and a half years.

The company's accounts for the month of January have just been closed, and with an increase in operating revenues of $1,281,000, it was able to save out of that very large sum of money, after allowing for operating expenses, taxes, per diem charges and reasonable charges for depreciation, only a trifle over $39,000.

In other words its plant furnished $1,281,000 more service, and received only $39,000 for doing it; and the charges for the use of these cars that have been poured in upon the railroad are so tremendous to a great terminal road like the New Haven, that it is in very serious difficulty. In January the account stands as follows: The New Haven alone paid for the use of foreign freight cars on its line $555,999.60. It received from foreign roads for the use of New Haven cars on their lines, $286,724.44. It received through demurrage paid by the shippers $58,987.55—a total income for the use of its own cars of $339,711.99, making a net payment to the railroads for the month of $216,287.61; or, if anything like that should continue for a term of months, at the rate of over $2,000,000 a year.

It is very obvious that a simple sum in arithmetic would show it to be better, both for the shippers and the railroads alike, if that sum of money could be spent for the creation of proper terminal facilities, not only by the railroad but by the shippers themselves, so that when a car is received in New England it can be placed promptly by the railroad, and unloaded promptly by the shipper. That enormous sum to my mind is an uneconomicable result of the present practices in handling cars.

The summary of that feature of the New Haven company's business for a number of years is as follows: For the year ended June 30, 1913, when business was not in its present condition, and the car movement was reasonably prompt, the New Haven was able to have a credit on its so-called per diem of $83,000 for the year. For 1914 when business was still more depressed it had a credit of $204,000. For 1915 when we began to get some of this influx of raw material coming into the manufactories, the debit balance went against the New Haven $259,000. For the seven months this year it is against the company to the extent of $925,000.

This problem has received from us, and no doubt from every other railroad in the eastern territory, the greatest attention, because we are almost strangling in our own burden of cars. We have had, as I have already said, co-operation from the shippers, and we have also had the help in our territory of a great many of the Chambers of Commerce and Boards of Trade, who realize that the situation cannot be cured by the railroads alone.

There are various ways perhaps by which it can be cured, or a step taken in the direction of a cure, although that cure cannot be produced at once. We of the railroad feel that in spite of the fact, as the chairman points out, that certain commercial customs have grown up with the assent of the railroads, about storage and demurrage, and to a certain extent crystallized into the methods of doing business, that new conditions require new remedies, and that whatever the far-back causes have been for the present very difficult conditions, it would not be unreasonable to suggest that a policy more in line with what is done by the water carriers, be furnished under reasonable provision by the rail carriers.

In other words, that we should have permission to have a sliding scale of storage for freight in warehouses and for the storage of freight in cars, because this storage is a distinct barrier to meeting the conditions of the whole country. And it would seem not unfair to have a policy established by which the receiver of the freight, as well as the rail carrier, should be under as much pressure as is reasonable, to create its own facilities. That would protect the shipper, or create the necessary facilities for handling his business against congestion caused by the failure or inability of some other receiver who for various reasons has not provided sufficient facilities to handle his freight, and it would release these cars more promptly so that they could go back to the connecting carriers, to the Mississippi river or beyond.

One point that I forgot to mention was this, that this export business so far as the New Haven road is concerned, is not a very vital matter. The New Haven does not engage particularly in the export of food products. It does some exporting of the so-called war munitions, but while those help to contribute to our difficulties, they are not so much now the trouble as the general uplift of the movement of all kinds of commodities, raw materials and fuel and food supplies coming in locally to New England, and manufactured articles of all kinds going out all over the country.

Then I forgot also to point out to you as to how this failure to handle the cars promptly runs rapidly into car days. Before we began to have this serious congestion on our system, the average detention, taking approximately 100,000 cars handled, was one-quarter of a day, by the railroad. That has jumped up now to half a day, making a very substantial number of car days. The average detention by the shipper in handling a car after it is ready for him was, a few months ago, 1.76 days. Now it has jumped up to 2.05 days, or an increase which, on 100,000 cars, represents 29,000 car days. We have numerous examples where cars are held from 10 to 30 and 40 days because of insufficient unloading facilities.

The question of a cure in the way of any adjustment of charges is, of course, quite a technical one, and I take it that it will not be expected of me to try to discuss that in detail; that if any such suggestion should meet with the approval of the commission, after hearing from the Chambers of Commerce and the shippers who are here, that would have to be taken up by those who are more familiar with the details of these rules and regulations.

It does seem to me that there is today quite a burden being placed on the railway companies, and in consequence upon those who need the service of the railway companies, by permitting the use of its rail system at prices that I think are far too low even for the use of the rolling stock under present conditions, and also at prices that rather repress the effort of many to create the necessary facilities for receiving and handling freight on private side tracks and at their terminals.

In answer to questions Mr. Elliott said: We have, of course, a very considerable number of empty cars. We had at terminals a day or two ago (this is for March 3) empties for movement to the east or the north, 1,732 cars. That would be empties going in for loading or going to connections like the Boston & Maine and the Boston & Albany, through northern junctions. We had empties for movement west or south, 3,859 cars. That would be for out New York connections and connections via the Poughkeepsie bridge route. On the same date we had loads for movement west or south, 8,765.

We have put up a very drastic embargo and are declining to receive freight from any connections except certain specified articles like perishable freight and food for human consumption, food for livestock, and I think one or two other commodities. But for a temporary relief in our territory I do not see anything else that we can do but that, with the idea that in one week or two weeks or three weeks, the owners of the freight that is now on hand and the 12,000 cars that connecting lines have to give us, can be placed, unloaded and sent back. In other words, you might call it a temporary cessation of business, for the railroad is no different from any other business. There comes a time when it has got all it can do, and it simply has to say frankly, "We are very sorry but we have not the physical or mental or organization ability to do any more than we are doing."

Of course we cannot add right away to our facilities. It is an impossibility under present conditions to obtain the material, and in our own case money. So as a temporary expedient I do not see anything else for us to do, but to say to the public and to our connecting lines: "We have all that we can do; we have to clean up a little before we can do any more; we cannot carry any greater load."

Of course there is a very serious reflex action in our territory because of this freight congestion, and that is this: We run something like 2,000 passenger trains a day, and they are interlaced through many junction points. The very fact that the freight movement is unsatisfactory, in many ways results in a very much enlarged use of the parcel post and a very much enlarged use of the express privilege on the railroads, to such an extent that branch line passenger trains today are being delayed at one junction point after another handling the volume of parcel post and of express matter for which the local facilities are not properly adjusted, either in platform space, warehouse space or in labor, and it is throwing our schedules all off very badly, with a consequent and very natural complaint from a great many people throughout New England, who do not see why they should be discommoded because of this plethora of freight business. So we owe a duty, it seems to me, which we must perform, to cut this gorge of freight business, or do something, so that we can do our own inter-New England business, both freight and passenger, with somewhat less disturbance than there is today, a growing disturbance because all kinds of materials are being shipped by parcel post and express that ordinarily have gone in the merchandise way-freight trains.

Statement of A. W. Thompson.

At the opening session Mr. Thompson, vice-president of the Baltimore & Ohio, read into the record the resolutions adopted by the American Railway Association and told what steps were being taken by the association to relieve congestion in the East and get empty cars returned to the West. This point was covered in the *Railway Age Gazette* of March 3, page 395.

On Tuesday morning the representatives of shippers of grain in Nebraska, of eastern grain men, of commercial organizations of Baltimore and Philadelphia, and of other bodies of shippers told how the present conditions affected their interests. A representative of the Baltimore shippers suggested that if the situation were turned over to A. W. Thompson and one or two other railroad men with like energy it might be straightened out in a short time.

On the one hand complaint was made by representatives of shippers that embargoes were not equally enforced and on the other hand by representatives of other shippers that the embargoes should be made more elastic. Another suggestion was that all the various railroad companies' facilities on the Jersey shore bordering the Hudson river and New York harbor should be combined and used jointly.

The following is the substance of a statement by Mr. Brown, representing Chicago shipping interests:

Statement of J. S. Brown.

The invitation to this conference here read "With respect to the causes of congestion and proposals for relieving same." I had not intended to go into any phase of this subject except the question of embargoes, particularly the discriminatory feature of embargoes, and the tilting of them to the benefit of some localities or some of the shippers.

However, after hearing the announcements of the railroads yesterday afternoon as to their intentions with respect to increasing demurrage charges, storage charges and the like, and not knowing whether that is an announcement on the part of all of the railroads of the United States, I have concluded to go into the matter just a little bit further than first intended.

I might say that the American Railway Association committee on relations has had some conferences with the National Industrial Traffic League demurrage committee, of which I am a member, and they had about ten days ago a conference lasting the greater part of two days. It was understood that they would meet again last Monday morning. Upon receipt of the notice of this hearing the A. R. A. were advised that most of the members of the demurrage committee would come to Washington in response to these requests. Notwithstanding that I understood that the conference between the A. R. A. and the league committee was held yesterday. Just what they did, I am not informed.

But as the A. R. A. represents all of the railroads in the United States, and if it is the purpose of that committee to publish tariffs notwithstanding the objections of the western shippers to any increase in demurrage charges, then we wish to protest now, although it had not been our intention to do that, because we did not know that any announcement would be made by any railroad as to its intentions to increase demurrage charges or other charges until after this conference between the A. R. A. and the league demurrage committee had been concluded.

If these increased demurrage charges and storage charges were to be applied in the East, so far as we are concerned the situation could be left in the hands of the eastern shippers and receivers, and it would not be necessary for us to make any suggestions whatever as to relief, except, as I said before, to secure the return of cars to the West and adopt some plan so that embargoes may be made more effective.

I will take up first the cause of the congestion, those not chargeable to the carriers, and second, those for which the carriers, in my opinion, are responsible. I will then take up the effect of car shortage on the grain producers and dealers in the West, and may make some suggestions for relief, but those will be only temporary. Perhaps after this congestion is relieved the experience we have had will show that but few

suggestions that are made here—not all of them at least—would be efficacious for a permanent operation.

Now, some of the causes of congestion for which the railroads are not responsible are these:

The late movement of United States grain, particularly wheat and oats, due to bad weather, until some time in the fall, and to a late harvest, and so on. Wheat and oats were overdue in the western markets because of the failure of ocean vessels to keep charter engagements.

When United States wheat has been on the export basis, as it was until 1915, it moved in fair volume by lake from Chicago. That is, the percentage of lake to rail movement has been fairly well maintained, considering the obstacles placed against lake movement by the eastern trunk lines.

There was a decline in the wheat movement by Chicago from 1906 until 1914, when it went up again, and went down in 1915 to 16,000,000 bushels. This is all from Chicago.

The rates were increased on the 1915 lake business. That is, in December, 1914, on export and late in the spring of 1915 on domestic. The increases allowed on ex-lake grain were no greater in the main than those from Chicago, Peoria, St. Louis or any place in the West, and that on top of the gradual increase from the year 1906. That has thrown a larger volume of business by rail, as I will show.

In 1915 the wheat movement into the markets was late, and that together with the lack of boats, led to the larger wheat movement all-rail. Aside from the increase in the ex-lake rates to the East, the trunk lines were not responsible for the things that I have mentioned.

The heavy movement of wheat into the Chicago market at least is generally in July, August and September. There was a fairly good movement into Chicago in August and September, 1915. By that time the lake-and-rail rates had gone up so high that it was cheaper to ship all-rail.

The point that I wish to make is that the eastern railroads knew of this condition and since September have been responsible in large measure for that condition, except of course the ocean boat failures. They are absolutely responsible for the car shortages in the West for grain. The railroads have known since September that Canadian and the United States northwestern wheat was in better condition than the wheat from the hard wheat and soft wheat sections of the country. And it early became known to them that the northwest wheat was being bought by foreign governments in large quantities, and that a large part of the movement was being made by lake from Michigan ports. The Chicago movement had to be by rail largely instead of by lake.

By September, as testified to by Mr. Elliott, the movement of all other freight had become heavy, and that combined with the grain, contributed to the congestion in the East. The boat movement to Chicago was a little bit later. The oats were in somewhat better condition, and that also contributed.

The railroads of course are not responsible for that. The high ex-lake rate on oats from Buffalo and other lake ports, taken together with the increase in the Chicago rates, has driven oats almost entirely off of the lake.

In 1913, the movement was a little bit over 3,000,000, while to the East from Chicago all-rail it was over 18,000,000. The entire movement of all grains from Chicago to the East by rail in 1915 was over 215,500,000, an increase of over 30,000,000 compared with 1914 and 1913. It was also correspondingly greater by rail in 1915 than by lake; and actually greater in volume in 1915 by rail than in any recent year by rail.

These figures are given to the commission so that they will understand why in our opinion the railroads are responsible in very large measure for the failure to take earlier cognizance of the congestion that has been growing worse. Other business has also increased to the East, and it seems to me that the eastern railroads did not take heed sufficiently early of the congestion to be able to relieve it. They come here now suggesting remedies that will not cure it either temporarily or permanently, in my opinion.

Embargoes against the movement of grain from Chicago to the East were made as early as last September. We have no complaint about the placing of them where necessary, but we now complain because they have been ineffective, and that we believe is because they have not been enforced.

Less than ten days ago it was reported that on the Baltimore & Ohio Railroad there were 2,600 cars of grain. In the face of that the embargo on lake wheat, that is, wheat moving via lake, was lifted, but was not lifted at Chicago. The effect of lifting that embargo at lake ports was to let in Canadian wheat that was there in boats.

Now, those boats will not be needed at the head of the lakes within six weeks. The western roads' cars in the East are needed in the West now, are needed in the month of March, while the weather is cool—not next summer.

It is the information of some of our Chicago shippers that embargoes have not been enforced. We do not claim that that was done intentionally, but inquiries in some directions and in some quarters seem to show that because they were not understood by all alike, they would interpret it differenty at one place than at another place.

Embargoes have been invaded through various devices. In our opinion the lake ports have been favored. Grain has been accepted for domestic points when it must have been known or should have been known that it was reconsigned for export, and that the railroad in order to relieve itself of that grain would permit its reconsignment for export, against an embargo. I mean by that, that it is well known that grain has been shipped to interior points, some Virginia cities that could not possibly use 50 or 60 cars of grain in a long time; the grain would be consigned to that point in the name of some eastern man at the seaboard. It would be held there and as soon as the embargo was lifted the railroad in self-defense would take that grain in preference to any other.

It could not be blamed for that. What it could be blamed for was permitting such grain as that to come on its line in the first place when it knew that it was not intended for that interior point.

I think that when an embargo is placed on ex-lake grain that embargo should specifically state that it will not accept reconsignment of domestic freight for export.

That don't shut it out. That would not prevent the man from some interior point to ship his grain. Of course it would have to be watched. I say place the embargo against the man who tries to do that sort of thing—I don't care whether he is a shipper or receiver.

Now then, what is the railroad remedy? Cancellation of the average agreement; increased storage and demurrage rates, not only in the East, but also in the West.

Mr. Chandler, representing New England, when speaking yesterday, while perhaps he did not directly advocate it talked as though he would be in favor of imposing increased charges at places where it was most needed to relieve congestion. In that I agree with him. We will most emphatically oppose any attempt to increase the demurrage charges or any other charges in the West where we have no trouble at all. In fact, there is a scarcity of cars in the West, and the result of that is that loaded movement moves with more freedom than it would if all the cars of the Western roads were at home. The reverse is true down East.

Commissioner Clements asked: Do you think it would be defensible for the commission to acquiesce in or approve the laying of heavy and unusual drastic charges at particular places and not at others, from time to time? Could we do it with any such degree of intelligence and safety that it would not be sanctioning discrimination as between places?

Mr. Brown replied: If you could not do it at individual

places or in particular sections where perhaps the shippers were partly responsible, then I do not see why it should be permitted all over the country, especially in the West, where there is no need for it. I think that in any particular section of the country, at any particular town, if shippers and receivers have abused the railway facilities, that the best way to bring them to terms and punish them is to impose additional charges. But I do not think that should be done where there is no congestion and where freight is being handled with promptness.

In Chicago on inbound business when any elevator offends, and the road serving that elevator does not embargo it, the incoming roads whose grain is ordered over from the inspection track to the elevator puts on an embargo themselves.

We first insist on all western cars being returned at once. As a check on this we would suggest that the commission have not later than April 1 the relative conditions on February 1, March 1 and March 15. That is, as to system cars and foreign cars on the eastern railroads; also the empty cars.

If the commission will call for the report it will then see whether or not the eastern roads are keeping the agreement they made with the western roads, that they were to return 120 per cent. empty to 100 per cent. loads.

It was said that the first week that arrangement was in effect it resulted in 17 per cent. more empty cars going west than were received under load. That could as well have been done last October or November as in February and March. Had it been done then there would be no occasion for suggesting here any increase in charges upon the shippers for detention to cars.

The railroads themselves have been to blame more than the shippers have. And as they have, why don't they penalize one another? Why don't they increase the per diem charge after a railroad system has had the car on its rails more than 30 days?

I might suggest temporarily, where conditions are bad, an increase in the switching power, in the yard forces, more frequent switching on industry tracks and perhaps also the public tracks; pulling empties out promptly after unloading, so they may not be abused; notice on arrival of loaded cars by messenger, which I think is a very important thing; more convenient hours for placing empties for loading and unloading.

Cut down the supplies of empty cars to shippers who do not load them promptly.

Urge belt lines to handle interchange cars more expeditiously. A belt line where it gets only so much per car for switching has no incentive behind it and does not always handle cars as promptly as it might.

More prompt handling of cars from assembly yards to loading points. That is with reference to grain from the West. We find at Chicago that a railroad after giving a good road haul service, and having earned its freight charges relaxes its vigilance in the matter of moving that car promptly from its inspection tracks to a connecting line. Therefore the good service of the road is loss, and the cars are delayed unduly.

Compel railroad storekeepers to discontinue the use of cars for storage purposes as that is now being done.

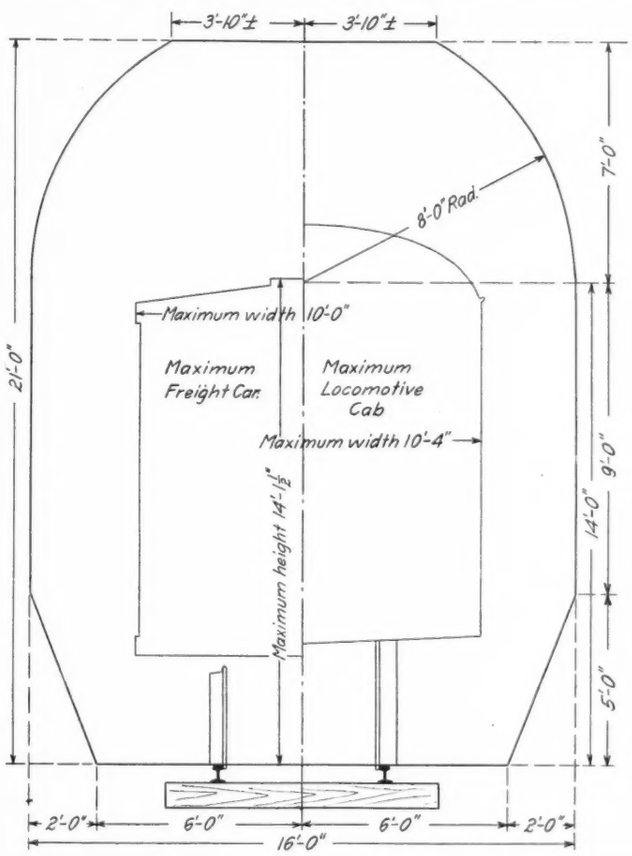
Heavy loading of less than carload cars, and the discontinuance or less frequent movement of what are called "R. R. Q." cars—that is, "Run Regardless of Quantity." There are a great many of them at every large center in the country. Competition, of course, has developed that, but I think temporarily there could be some improvement there. In fact, I know one general manager at Chicago who does not think he has lost any dignity by going down to the freight house and freight yards in the past few weeks and personally getting out a great many light loaded merchandise cars. He is not going to leave it to the traffic department in Chicago; he has taken the matter in his own hands.

On Tuesday afternoon representatives of other shippers were heard and the railway officers put in certain further evidence.

The commission then adjourned without making any announcement of its intended action.

REVISED CLEARANCE REGULATIONS IN MINNESOTA

The Minnesota Railroad & Warehouse Commission conducted a hearing at St. Paul, on February 5, on the subject of clearances, with special reference to the 1913 statute establishing a rectangular clearance diagram 16 ft. wide and 21 ft. high from the top of the rail for single track. The railways contended that this requirement was impracticable and unnecessary; and after they presented their evidence the



The Revised Clearance Diagram of the Minnesota Railroad Commission

commission issued an order permitting the roads to depart from the requirements established by this statute, outside of switching zones.

The revised clearance diagram provides that for single track bridges and tunnels on tangents the minimum clearance between points 5 ft. and 14 ft. above the top of the rail shall be not less than 8 ft. from the center of the track, while at the top of the rail the horizontal clearance shall be not less than 6 ft. from the center of the track. The vertical clearance above the top of the rail shall be 21 ft. for a width determined by the intersection of a line drawn parallel with and 21 ft. above the top of the rail and the arc of a circle of 8 ft. radius drawn from a point 14 ft. above the center line of the track as a center.

It is provided that the above clearance shall be increased sufficiently on curves to provide the same minimum requirements for a car 80 ft. long, 14 ft. high and 60 ft. center to center of trucks, with proper allowance for curvature and superelevation.

General News Department

Fire destroyed the elevator of the Minneapolis & St. Louis at Peoria, Ill., on March 6. The elevator contained approximately 1,000,000 bushels of grain.

The Chicago Great Western has organized a freight claim prevention association to investigate the causes of freight claims and to put into effect the necessary remedies. The association is organized along divisional lines.

The Illinois Central has recently completed a new and well-equipped hospital for its employees at Fifty-seventh street and Stony Island avenue, Chicago, which was officially opened on March 4. The present capacity is 125 beds.

A. M. Schoyer, resident vice-president of the Pennsylvania Lines at Chicago, outlined the plans of the new Union station in Chicago, and the progress that has been made to date in its construction, in an address before the Chicago real estate board on March 2.

The Bonaventure station of the Grand Trunk in Montreal was destroyed by fire on March 1; estimated loss, $300,000. It was a wooden structure erected about twenty-five years ago. The station was used by the Canadian Government Railways, the Delaware & Hudson, and the Central Vermont. The fire was accidental in its origin, being caused by a short circuit.

The Buffalo, Rochester & Pittsburgh has issued three booklets on "Safety and Service," containing lists of unsafe practices. The engineering, mechanical and transportation departments each formulated a set of regulations, and one of these books is to be put in the hands of every employee of those departments. The books are of a size that can easily be carried in the pocket so that they may be constantly referred to for a violation of the precepts here laid down. Employees will be amenable to discipline the same as for a violation of the rules pertaining to train operation.

The New York Central is now issuing in booklet form a sketch by President Alfred H. Smith of the railway's history from the chartering of the Mohawk & Hudson in 1826 to the present day. The booklet in its 30 pages not only touches upon the gradual development of the system to its present standing, but treats in great detail of what the New York Central is doing today in the way of four-tracking, new terminals, etc., in its effort to give its patrons a high grade service. It is well illustrated, many interesting views being given of the first trains and early terminals as contrasted with the present Twentieth Century Limited and the new Grand Central Terminal. There are also a number of illustrations of the four-tracking now in progress along the Hudson river.

The Retired Men's Association of the Pennsylvania Railroad, consisting of more than 200 employees of the Pennsylvania now retired under the company's pension plan, who get together every year for a reunion and banquet, held its third annual reunion on January 21, at the P. R. R. branch of the Y. M. C. A. in West Philadelphia. All of the men are over 65 years of age and most of them are over 70. One hundred and sixty-five members of the association were present. William A. Patton, assistant to the president of the Pennsylvania, acted as toastmaster, and other guests who were present and made addresses included W. W. Atterbury, vice-president in charge of operation; W. H. Myers, vice-president in charge of real estate, purchases and insurance; Capt. John P. Green, retired vice-president; George B. Massey, retired general counsel; E. B. Hunt, superintendent of the voluntary relief department, and Walter M. Wood, general secretary of the Y. M. C. A., Philadelphia.

The Chesapeake & Ohio Employees' magazine publishes an interesting story about one of the road's oldest employees, Andrew Williams, a negro porter in the master mechanic's office at the company shops at Richmond, Va., known as "Doctor," who died recently at the age of 95 years, after having been in the service of the road nearly all his life, and who had persistently refused to be pensioned. He was taken sick while at work, and was carried away from the shop in an ambulance. He first entered the service of the road as a track man. As age came on he was transferred to the shop labor force, and as he became feebler, to mail messenger and porter, carrying the railroad mail between the shops and general offices. About 10 years ago he was relieved of all duties except the care of the master mechanic's office. The article concludes with the following paragraph: "Providence did not place 'Doctor' in a prominent part of our social mechanism, but he filled his place so well that every part of society with which he came in contact ran more smoothly."

The Federal Trade Commission has sent to Congress a report on pipe line transportation of oil from the mid-continent oil fields in Oklahoma and Kansas. Shipments from this field in 1914 amounted to 97,995,400 barrels, equal to one-third of the total production in the United States. Most of this oil goes to refineries in Illinois, Indiana, Ohio, Pennsylvania, Maryland, New Jersey and New York. The commission calculates that the investment in pipe line property in the year 1913 amounted to $43,857,000; and the report says that the companies averaged in net earnings (each year?) for the period from 1911 to 1913 a sum equal to 19.33 per cent on the investment. The commission holds that the profits are too high and that rates ought to be reduced so as to give independent oil producers a better chance to compete in the large markets. The lines are controlled by the large oil companies. The commission cites certain rates which are declared unreasonably high. The rate from the Cushing pool in Oklahoma to Whiting, Ind., near Chicago, is 42 cents a barrel, the cost of transportation (including depreciation) was about 11 cents, and this cost plus 6 per cent interest was calculated to be about 14½ cents. For one of the lines to Port Arthur on the Gulf of Mexico the tariff was 40 cents, the cost about 16 cents, and cost plus 6 per cent interest, 20 cents.

Increases in Wages

The Virginian Railway has increased the pay of train despatchers $7.25 a month.

The Chicago, Milwaukee & St. Paul has increased the pay of its track repairers from 15 to 16½ cents an hour.

The New York, Ontario & Western has made an increase of 1½ cents an hour in the pay of laborers in the shops at Middletown, N. Y.

The Chicago, Burlington & Quincy has increased the wages of its track repairers from 15 to 16 cents an hour, and increased the hours of work from 9 to 10 a day.

The Baltimore & Ohio has made an advance of 1½ cents an hour in the pay of machinists in the shops at Grafton, W. Va.; and an advance has been made also in the pay of some of the men in lower grades.

The Grand Trunk has made an increase of 5 cents an hour—said to be from 20 cents to 25 cents—in the pay of freight handlers at its terminal in Portland, Me., following a brief strike and mediation by the mayor of Portland.

The Delaware, Lackawanna & Western, the Delaware & Hudson and the Central of New Jersey have advanced the pay of track laborers from $1.60 a day to $1.75 a day. On the Lackawanna the foremen are granted an increase of $5 a month.

Insuring the Punctuality of a Train

In order to secure Madam Louise Homer recently for a concert on the date they wished, the Musical Club of Colorado Springs acceded to the demand of the singer's manager that if, because of delay of the train, she did not reach Topeka, Kan., the following night, the large financial loss resulting would be met by the Colorado Springs organization. There was no insurance company in the country that would assume this novel risk, but finally Lloyds, of London, was induced to create a

new kind of policy to meet the situation. Having determined by examination of the Santa Fe's record for punctuality of trains that material delays were rare, Lloyds, through an American agent, issued a policy for the desired sum, $1,100, and took a premium of $55. The train went through on time.

Date of National Railway Appliances Association Exhibit

Some misunderstanding has arisen regarding the dates on which the National Railway Appliances Association exhibit will be open at the Coliseum and Annex, Chicago. The exhibit will open at eight o'clock on Monday morning, March 20, and will close at ten o'clock on Thursday evening, March 23. Contrary to previous custom, the exhibit will not be open on Friday.

Operating Revenues and Expenses of Express Companies for November

The following statement, which is subject to revision, has been compiled by the Interstate Commerce Commission from the monthly reports of operating revenues and expenses of the principal express companies for November, 1915. (The express companies have three months in which to make reports):

A—For the Month of November

Item	Adams Express Co. 1915	Adams Express Co. 1914	American Express Co. 1915	American Express Co. 1914	Canadian Express Co. 1915	Canadian Express Co. 1914	Globe Express Co.* 1915	Globe Express Co.* 1914	Great Northern Express Co. 1915	Great Northern Express Co. 1914
Mileage of all lines covered (miles)	44,972.22	44,939.98	73,640.94	72,412.81	10,238.13	9,676.50	.....	2,839.78	9,582.80	9,568.79
Charges for transportation	$3,499,941	$2,824,757	$4,649,756	$3,703,699	$326,397	$252,264	$18	$51,689	$289,824	$249,437
Express privileges—Dr.	1,709,214	1,484,101	2,350,354	1,870,199	171,778	124,940	9	26,145	176,413	151,470
Operations other than transp.	52,540	43,230	299,702	166,722	6,763	4,827	1	840	5,363	4,178
Total operating revenues	1,843,267	1,383,885	2,599,104	2,000,221	161,382	132,151	7	26,383	118,774	102,145
Operating expenses	1,568,209	1,538,677	2,218,211	2,053,699	135,533	128,240	965	28,108	87,858	88,138
Net operating revenue	275,057	154,792	380,893	53,477	25,848	3,910	957	1,724	30,916	14,007
Uncollectible revenue from transp.	717	488	440	87	32	...	...	...	25	...
Express taxes	22,689	12,931	43,619	31,759	4,200	4,000	700	1,100	3,467	3,801
Operating income	251,651	168,211	336,833	85,324	21,616	...	1,657	2,824	27,423	10,205

Item	Northern Express Co. 1915	Northern Express Co. 1914	Southern Express Co. 1915	Southern Express Co. 1914	Wells Fargo & Co. 1915	Wells Fargo & Co. 1914	Western Express Co. 1915	Western Express Co. 1914	Total for Companies Named. 1915	Total for Companies Named. 1914
Mileage of all lines covered (miles)	8,233.03	8,118,34	34,745.60	34,566.60	114,563.93	112,441.16	5,232.87	5,174.26	301,209.52	299,738.22
Charges for transportation	$239,241	$207,873	$1,389,501	$1,107,341	$3,894,538	$3,105,841	$124,492	$100,921	$14,413,711	$11,603,827
Express privileges—Dr.	130,683	112,445	707,614	566,375	2,016,348	1,582,703	58,967	56,007	7,321,384	5,974,391
Operations other than transp.	4,297	3,414	27,374	27,181	93,070	65,589	4,096	3,069	493,209	319,053
Total operating revenues	112,855	98,842	709,261	568,146	1,971,259	1,588,727	69,622	47,984	7,585,536	5,948,489
Operating expenses	89,790	87,595	560,492	515,212	1,649,418	1,524,851	54,260	54,814	6,364,741	6,019,338
Net operating revenue	23,065	11,246	148,768	52,934	321,840	63,876	15,361	6,830	1,220,795	70,849
Uncollectible revenue from transp.	21	10	101	7	1,276	667	...	16	2,616	1,278
Express taxes	5,000	5,000	13,529	14,277	33,820	36,610	1,299	1,138	128,326	110,618
Operating income	18,043	6,236	135,137	38,649	286,743	26,598	14,061	7,984	1,089,853	182,745

B—For the Five Months Ending with November

Item	Adams Express Co. 1915	Adams Express Co. 1914	American Express Co. 1915	American Express Co. 1914	Canadian Express Co. 1915	Canadian Express Co. 1914	Globe Express Co.* 1915	Globe Express Co.* 1914	Great Northern Express Co. 1915	Great Northern Express Co. 1914
Charges for transportation	$16,758,291	$14,566,500	$22,796,205	$19,869,305	$1,685,781	$1,439,028	$1,145	$341,316	$1,534,468	$1,462,646
Express privileges—Dr.	8,261,915	7,546,738	11,494,923	9,894,419	861,594	726,355	447	170,955	931,833	887,677
Operations other than transp.	245,101	217,604	1,185,885	924,924	27,890	26,216	6	4,226	27,473	24,280
Total operating revenues	8,741,478	7,237,367	12,487,169	10,899,810	852,076	738,890	703	174,586	630,108	599,248
Operating expenses	7,577,874	7,745,207	10,864,936	10,745,466	689,337	675,248	4,987	150,440	450,514	455,721
Net operating revenue	1,163,603	507,840	1,622,232	154,344	162,739	63,642	4,283	24,146	179,594	143,526
Uncollectible revenue from transp.	2,727	2,375	3,197	703	144	...	...	...	119	...
Express taxes	88,512	85,131	216,455	177,790	21,000	20,000	3,500	5,500	19,575	20,803
Operating income	1,072,364	595,347	1,402,580	24,149	141,594	43,642	7,783	18,646	159,900	122,723

Item	Northern Express Co. 1915	Northern Express Co. 1914	Southern Express Co. 1915	Southern Express Co. 1914	Wells Fargo & Co. 1915	Wells Fargo & Co. 1914	Western Express Co. 1915	Western Express Co. 1914	Total for Companies Named. 1915	Total for Companies Named. 1914
Charges for transportation	$1,393,918	$1,296,475	$5,885,985	$5,437,154	$18,354,084	$15,990,510	$610,114	$510,842	$69,019,995	$60,913,781
Express privileges—Dr.	751,535	699,172	2,996,401	2,772,148	9,500,025	8,192,999	284,424	274,425	35,083,101	31,164,893
Operations other than transp.	21,572	17,700	135,463	129,750	482,387	311,436	18,405	15,487	2,144,189	1,671,629
Total operating revenues	663,955	615,004	3,025,048	2,794,756	9,336,446	8,108,947	344,095	251,904	36,081,083	31,420,517
Operating expenses	455,781	463,750	2,562,158	2,616,237	8,024,426	7,620,159	272,617	269,937	30,902,633	30,742,170
Net operating revenue	208,174	151,253	462,889	178,518	1,312,020	488,787	71,477	18,032	5,178,450	678,347
Uncollectible revenue from transp.	509	63	311	169	5,674	2,420	24	50	12,708	5,783
Express taxes	25,000	25,000	60,794	73,672	170,900	186,058	5,358	5,656	617,096	599,618
Operating income	182,664	126,190	395,784	104,677	1,135,445	300,308	66,095	23,739	4,548,646	72,951

* Discontinued operations on April 30, 1915.

Progress of Negotiations for New Galveston Causeway

Negotiations for the reconstruction of the Galveston causeway, destroyed by the flood last August, have been in progress almost ever since the date of the storm. The interested parties are the county, the interurban lines and the railroads. A definite agreement has been reached, which confirms the stand taken in an editorial in the *Railway Age Gazette* on September 17, 1915, page 490, to the effect that the 6,000 ft. of causeway embankment which was destroyed must be replaced by a structure providing additional waterway. No agreement has been reached, however, as to the type of structure to be built. The railroads are generally favorable to a trestle structure consisting of reinforced concrete slabs supported by bents of reinforced concrete piles. The county authorities, however, seem determined upon an arch structure. Their plan provides for a duplicate of the existing waterway, i. e., 28 70-ft. reinforced concrete arches, the remaining portion of the 6,000 ft. to be occupied by 50-ft. arches.

The portion of the old causeway which was destroyed consisted of an earth embankment retained on each side by bulkheads extending about four feet above the low water level, and consisting of reinforced concrete sheet piling. These were not disturbed by the storm which washed away all of the embankment contained between them. It is proposed to remove the sheet piling for the length of the proposed twenty-eight 70-ft. arches, thus providing a free waterway for the 56 arches of that length. For the portion of the structure consisting of 50-ft. arches it is the idea to leave the bulkheads in place, filling the space between them with clay to the level of the top of the sheet piling with a crown of about one foot along the center line of the structure for drainage. This fill is then to be covered with cement grout or a shell of concrete to make it impervious. Negotiations, however, have not yet been closed either as to the type of structure or the apportionment of the costs between the various interests involved. Pending the completion of the new structure communication between the city of Galveston and the main land is over the temporary pile bridge built by the Santa Fe and the Southern Pacific within two weeks after the flood.

A Code of Ethics for Engineers

A committee of the Western Society of Engineers, Chicago, has submitted a report outlining a code of ethics for engineers. This code is designed as an outline of the professional relation

of the engineer to his clients and to his fellow practitioners, to the end that the standards of the profession may be kept on a high plane.

Western Railway Club

Frank McManamy, chief inspector of locomotive boilers, Interstate Commerce Commission, will address the Western Railway Club on Tuesday evening, March 21, at the Grand Pacific Hotel, Chicago. The usual get-to-gether dinner will be served at 6:30 p. m. in the hotel. The past two dinners have been very successful, with nearly 100 members of the club in attendance. They provide an opportunity for general conversation before the paper of the evening is presented.

Commercial Men Call for Arbitration

The executive committee of the Chicago Association of Commerce has adopted the following resolutions regarding the wage controversy between the railroads and their train service employees:

"Whereas, certain grave differences are impending between the railroads of the United States and their train service employees which, if not adjusted, threaten to result in a serious interruption of railroad transportation; and

"Whereas, arbitrary action on the part of either side, without the disputed questions arising from the demands of both sides being submitted to a careful and impartial investigation, would be inimical to the public; and

"Whereas, a railroad strike, even temporarily interfering with traffic operations throughout the country, would be a national calamity, entailing a loss upon the public far greater than the loss to the parties to the controversy; be it therefore

"Resolved, that it is the sense of the Chicago Association of Commerce, if the parties to the controversy do not reach an agreement through direct negotiation, that both parties to the controversy should submit their differences to an impartial board of arbitration for the adjustment of all causes of difference between them, with due regard to the interests of the public."

The St. Paul Association of Commerce, at a meeting on March 3, adopted resolutions urging that pressure be brought to bear upon both parties involved in the present controversy between the railroads and their train service employees to accept arbitration as the only desirable means of ending the controversy. The resolutions were adopted at a meeting at which George T. Slade, vice-president of the Northern Pacific, and A. W. Trenholm, general manager of the Chicago, St. Paul, Minneapolis & Omaha, had spoken regarding the position of the railroads.

With its dividend checks sent out on March 1, the Atchison, Topeka & Santa Fe enclosed a short statement to the stockholders in explanation of the issues involved in the demands of the railroad train service employees for the so-called "eight-hour day" and time and one-half for overtime. The statement explains that this is not really a demand for a shorter working day, but a demand for greater pay. "It is ordinarily impossible," says the statement, "to run freight trains from one end of an operating division to the other in eight hours. To shorten the operating divisions would cost an enormous amount of money, besides the effect on existing towns of the shifting of division terminals. The men claim their requirements can be accomplished by reducing the tonnage of trains, which would not have the desired effect, as the number of trains, and consequently the meets, would be very greatly increased, and thus, while the time between stations might be quicker, the actual time over the divisions might not be shortened. A reduction of tonnage would also increase enormously the operating cost per ton mile. The trainmen do not really want a reduction in running time; their demand means only greater pay."

Iowa's Resident Oracle

[Editorial in the Evening Gazette of Cedar Rapids, Iowa]

Prudence in politics and pride in our product both demand that Clifford Thorne should be established at Washington as a resident oracle of Iowa, with authority to fulminate on any question.

This thing of having the brains of Iowa constantly subjected to the risks of transportation while a niggardly legislature refuses to insure Mr. Thorne at anything like his own appraisement, demonstrates a degree of recklessness that is a reproach to the business sense of the commonwealth.

Iowa never before had a Clifford Thorne and Iowa may never again have his counterpart. He is a limited de luxe edition of wisdom presenting the deductions of Solomon in tabloid form. He is a pocket edition of all the knowledge of the past and an index of all the truths that are to be. He is the tumbling rod that connects the power of thought to the machinery of government. He runs the whole thing and collects salary and expenses for only one office.

His trips to Washington to interject himself in public issues that might be handled by Senators Cummins and Kenyon, and the members of the house, probably amuse the capital. Most any morning they may expect to have a forty-gallon can of highly sensitized Iowa brains set off a Pullman car and delivered at the Capitol, or some of the departments—the can being the advance prospectus of Clifford Thorne in unabridged form. He is supposed to earn his salary by attending to the business of Iowa and there are other officials who are supposed to see that his salary is earned. Of course, his appointment as resident oracle for Iowa at Washington would be an admission of existing vacancy on the Iowa railway commission and a confirmation of rumors that such a vacancy would involve little change in the energy directed to that department of rule.

Program of the American Railway Engineering Association

The following is the program for the annual convention of the American Railway Engineering Association which will be held in the Congress hotel, Chicago, on March 21 to 23, inclusive. The morning session will convene at 9.30, and the afternoon session at 2.00 o'clock.

TUESDAY, MARCH 21

President's Address.
Reports of Secretary and Treasurer.
Reports of Standing and Special Committees.

Signals and Interlocking	Bulletin 181
Signs, Fences and Crossings	Bulletin 181
Water Service	Bulletins 181, 183
Iron and Steel Structures	Bulletins 178, 181, 183
Wooden Bridges and Trestles	Bulletin 182
Masonry	Bulletin 182

EVENING SESSION

Illustrated Paper on "The Nick and Break Test in the Inspection of Steel Rails," by Robt. W. Hunt.
Illustrated Paper on "Test of Douglas Fir Bridge Stringers," by H. B. MacFarland.

WEDNESDAY, MARCH 22

Ties	Bulletin 182
Conservation of Natural Resources	Bulletin 182
Yards and Terminals	Bulletin 182
Uniform General Contract Forms	Bulletin 182
Stresses in Railroad Track	Bulletin 182
Rules and Organization	Bulletin 184
Roadway	Bulletin 183
Ballast	Bulletin 183

Annual Dinner at 6.30 P. M.

THURSDAY, MARCH 23

Track	Bulletin 183
Buildings	Bulletin 183
Electricity	Bulletin 183
Grading of Lumber	Bulletins 174, 183
Records and Accounts	Bulletin 183
Wood Preservation	Bulletin 184
Rail	Bulletins 179, 184
Economics of Railway Location	Bulletin 184

New Business.
Election and Installation of Officers.
Adjournment.

At the conclusion of the evening session on Tuesday, March 21, Earl Stenison, engineer of maintenance of way of the Baltimore & Ohio, will discuss his recent paper on "Standardizing Maintenance of Way Work" and will answer questions of members. This has been arranged because of the large amount of interest aroused in this subject by his paper.

Annual Electrical Night Meeting of the New York Railroad Club

The New York Railroad Club will hold its annual electrical night at the Engineering Societies building, 29 West 39th street, New York, on Friday, March 17, at which time George Gibbs, of Gibbs & Hill, consulting engineers, New York, will present a paper reviewing the Report on the Electrification of the Chicago Terminals. Several prominent railway electrical engineers and other engineers interested in the subjct have been invited to participate in the discussion.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER, 1915

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses							Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	Miscellaneous.	General.	Total.				
Alabama & Vicksburg	143	$100,225	$36,188	$147,949	$18,214	$29,988	$3,944	$48,115	$2,224	$6,041	$108,525	$39,424	$10,350	$29,074	$16,991
Alabama Great Southern	309	361,443	97,297	491,121	44,333	119,388	12,929	139,442	3,180	11,045	330,317	160,804	15,156	145,634	85,878
Ann Arbor	301	174,302	42,522	231,226	25,928	31,959	4,662	73,890	467	10,036	146,942	84,284	12,800	71,442	14,076
Arizona Eastern	378	202,841	30,379	248,406	30,161	22,924	2,335	52,901	954	9,885	118,307	130,098	14,320	115,769	71,469
Atchison, Topeka & Santa Fe	8,627	6,315,204	2,263,715	9,335,754	1,163,854	1,467,162	203,690	2,484,828	.....	175,485	5,482,236	3,853,518	436,613	3,412,396	345,460
Atlanta & West Point	93	66,411	38,329	121,080	12,706	21,557	5,535	33,988	1,756	4,708	80,168	40,912	5,525	34,825	22,860
Atlanta, Birmingham & Atlantic	638	201,738	48,004	269,663	40,836	44,922	12,604	97,662	19	9,202	205,246	64,417	13,100	51,310	45,163
Atlantic & St. Lawrence	167	90,382	20,776	121,648	19,269	17,319	3,851	65,060	.....	3,661	109,159	12,489	11,505	978	—22,430
Atlantic City	170	79,727	59,581	150,027	59,638	16,261	1,999	82,252	96	1,327	161,573	—11,546	10,000	—21,543	25,699
Atlantic Coast Line	4,700	1,779,777	586,418	2,572,335	379,098	448,771	54,315	866,445	7,422	72,185	1,827,287	745,048	145,000	598,582	221,871
Baltimore & Ohio	4,535	7,962,899	1,344,886	10,004,431	1,218,373	2,157,751	163,483	3,044,381	55,984	204,168	6,843,859	3,160,542	281,180	2,877,407	1,189,446
Baltimore & Ohio Chicago Terminal	79	.....	530	164,445	19,812	20,422	789	65,041	1,472	4,428	109,401	55,044	17,654	37,388	6,117
Baltimore, Chesapeake & Atlantic	88	59,565	28,250	92,135	6,490	32,682	854	53,547	.....	4,047	97,620	—5,485	2,300	—7,790	—16,607
Bangor & Aroostook	632	269,469	65,723	355,043	48,778	48,805	2,774	84,815	3,776	11,293	200,211	154,832	12,675	142,157	18,334
Belt Ry. Co. of Chicago	26	.....	.....	259,321	20,084	28,014	639	105,032	.....	6,486	160,254	99,067	10,758	88,308	—53,574
Bessemer & Lake Erie	205	1,110,846	26,021	1,152,952	71,763	169,935	7,857	224,249	.....	12,097	477,752	675,200	16,781	658,418	214,367
Bingham & Garfield	27	162,293	3,022	166,144	14,098	17,734	919	23,708	69	2,052	58,581	107,563	5,275	102,288	62,029
Boston & Maine	2,302	2,749,842	1,280,901	4,429,911	626,676	531,721	33,787	1,726,636	15,084	93,708	3,027,612	1,402,299	154,133	1,248,166	193,822
Buffalo & Susquehanna Railroad Corp.	253	132,208	5,862	140,007	22,557	35,171	1,030	37,127	.....	5,794	104,680	35,327	2,600	32,727	9,072
Buffalo & Susquehanna Railway	91	16,325	5,469	24,111	4,220	5,486	443	11,450	33	2,363	23,996	115	1,600	—1,488	871
Buffalo, Rochester & Pittsburgh	586	928,647	89,154	1,052,239	162,925	213,578	10,813	311,234	1,453	22,445	722,447	329,791	20,000	309,791	92,489
Canadian Pacific Lines in Maine	233	68,609	16,200	93,013	28,380	13,088	6,029	35,791	.....	4,427	87,716	5,298	12,000	—6,702	10,748
Carolina, Clinchfield & Ohio	283	212,433	17,346	234,109	21,652	27,656	9,485	40,720	.....	9,221	108,202	125,907	14,250	111,657	23,741
Carolina, Clinchfield & Ohio of S. C.	18	10,435	1,400	12,142	881	90	1,649	2,307	.....	629	5,506	6,636	750	5,886	284
Central of Georgia	1,924	799,667	266,494	1,183,276	141,768	175,840	36,165	353,858	1,019	40,703	748,019	435,257	55,078	379,512	137,299
Central of New Jersey	681	2,272,873	474,188	2,912,622	214,723	477,849	37,797	921,985	12,499	56,999	1,721,850	1,190,772	116,908	1,073,863	286,249
Central New England	304	421,016	39,074	478,580	52,715	22,664	1,182	127,520	.....	4,981	208,897	269,683	12,800	256,883	167,960
Central Vermont	411	258,833	79,396	366,919	39,219	63,732	9,099	147,352	2,309	7,418	269,129	97,790	15,590	82,188	35,039
Charleston & Western Carolina	343	129,423	29,810	167,701	27,069	13,658	3,159	49,381	.....	4,881	98,090	69,611	5,000	64,611	29,157
Chesapeake & Ohio Lines	2,374	3,291,213	512,209	3,977,192	451,282	857,218	49,290	1,132,422	18,617	78,312	2,585,770	1,391,422	115,120	1,276,149	405,606
Chicago Alton	1,052	1,027,690	326,974	1,462,015	185,528	302,259	34,618	456,967	11,131	29,164	1,010,131	451,885	43,032	407,623	111,127
Chicago & Eastern Illinois	1,282	1,204,094	243,305	1,564,060	175,911	351,425	23,978	489,848	7,506	36,007	1,080,723	483,337	53,600	429,658	213,219
Chicago & Erie	270	577,935	48,202	676,442	76,271	61,712	18,328	234,802	2,366	14,006	405,398	271,043	29,650	241,393	153,313
Chicago & North Western	8,108	5,857,056	1,770,914	8,457,318	1,014,921	1,306,903	109,272	2,793,106	50,655	157,209	5,402,201	3,055,117	385,000	2,669,841	567,561
Chicago, Burlington & Quincy	9,366	6,811,051	1,840,393	9,493,928	957,559	1,227,925	114,684	2,583,904	67,055	159,901	5,111,029	4,382,900	353,593	4,029,307	702,693
Chicago Great Western	1,427	928,091	272,479	1,312,240	189,479	216,836	44,263	453,255	8,390	31,884	943,082	369,158	45,422	323,602	38,673
Chicago, Indianapolis & Louisville	622	469,078	163,675	681,639	89,314	103,809	19,614	218,738	175	17,135	448,505	233,134	27,570	205,550	69,461
Chicago Junction	24	.....	.....	205,097	30,286	18,097	1,012	100,057	.....	5,087	154,537	50,559	2,330	48,228	12,278
Chicago, Milwaukee & St. Paul	10,076	7,085,371	1,552,625	9,515,771	927,304	1,318,539	154,836	3,062,059	67,137	154,180	5,627,341	3,888,430	453,738	3,427,747	745,468
Chicago, Peoria & St. Louis	255	127,854	23,179	160,332	21,839	31,405	5,602	61,641	.....	5,618	126,105	34,227	4,800	29,427	14,421
Chicago, Rock Island & Gulf	477	213,212	56,908	293,935	34,645	34,768	9,355	97,075	1,908	7,908	185,660	108,276	8,295	99,969	5,221
Chicago, Rock Island & Pacific	7,663	4,333,065	1,528,481	6,330,758	1,017,539	1,103,939	142,863	2,278,168	54,270	143,396	4,736,499	1,594,259	296,686	1,297,235	—130,623
Chicago, St. Paul, Minn. & Omaha	1,753	1,252,874	425,909	1,797,462	211,656	209,328	26,043	605,032	14,121	41,982	1,105,437	692,025	89,465	601,957	90,666
Chicago, Terre Haute & Southeastern	374	200,633	16,442	223,271	31,392	41,284	4,471	59,685	887	6,774	144,492	78,779	10,417	68,360	49,190
Cincinnati, Hamilton & Dayton	1,003	799,699	141,169	1,048,716	180,807	229,159	17,427	366,390	3,592	19,838	815,307	233,409	27,283	206,103	88,667
Cincinnati, New Orleans & Texas Pacific	337	717,399	135,195	899,848	94,818	259,422	23,095	253,811	4,755	20,154	656,055	243,793	31,000	212,659	58,585
Cincinnati Northern	246	134,778	15,221	156,360	22,664	22,124	2,722	51,470	.....	3,055	102,035	54,325	5,500	48,804	4,669
Cleveland, Cincinnati, Chic. & St. Louis	2,381	2,601,758	742,767	3,652,627	421,530	690,142	69,875	1,109,894	25,094	79,103	2,385,085	1,267,542	128,000	1,138,917	190,383
Colorado Midland	338	120,815	14,781	146,637	23,937	34,578	6,758	61,119	897	6,329	133,619	13,019	10,000	3,019	—38,776
Colorado & Southern	1,089	658,712	110,264	823,153	90,153	137,620	10,248	218,209	3,675	21,834	481,738	341,415	35,000	306,394	60,074
Cripple Creek & Colorado Springs	87	100.626	16,051	118,552	24,448	10,024	3,365	29,243	.....	3,399	70,478	48,073	4,393	43,680	.....
Cumberland Valley	164	228,797	59,964	304,361	28,676	32,241	4,324	87,667	770	7,923	161,602	142,759	5,794	136,964	52,506
Delaware & Hudson Co.—R. R. Dept.	886	1,892,714	252,732	2,275,557	188,399	321,164	26,358	675,823	18,900	67,304	1,296,750	978,807	56,500	920,117	220,405
Delaware, Lackawanna & Western	959	3,337,329	726,141	4,446,482	369,592	593,070	68,030	1,309,215	33,058	77,647	2,443,467	2,003,015	170,000	1,832,905	369,339
Denver & Rio Grande	2,577	1,914,735	473,852	2,553,892	235,806	476,997	40,601	648,178	38,822	46,047	1,486,451	1,067,441	90,000	977,418	149,208
Denver & Salt Lake	255	166.370	22,829	195,526	20,416	35,460	1,519	66,109	.....	3,804	127,308	68,219	8,024	60,041	18,142
Detroit & Mackinac	393	68,177	25,864	101,100	10,964	15,575	1,796	31,737	.....	2,745	62,817	38,283	6,555	31,728	8,272
Detroit & Toledo Shore Line	81	135,984	.....	136,518	13,580	7,480	1,482	33,577	.....	2,733	58,852	77,666	5,575	72,091	5,284
Detroit, Grand Haven & Milwaukee	191	187,000	71,000	293,442	22,906	30,258	5,398	117,217	710	3,964	180,452	112,990	3,770	109,219	58,770
Detroit, Toledo & Ironton	441	188,746	14,892	216,064	18,138	32,169	3,560	78,554	.....	6,048	138,469	77,595	5,500	72,068	75,983
Duluth & Iron Range	273	693.621	18,515	732,835	62,467	74,089	876	156,236	347	10,668	394.694	428.141	37,938	390,203	191,241
Duluth, Missabe & Northern	370	1,278,836	25,399	1,371,806	108,143	120,062	1,912	198,487	7,180	10,478	446.261	925,545	78,424	847,121	569,485
Duluth, South Shore & Atlantic	628	192,702	72,338	292,372	52,607	33,698	7,122	96,692	4,163	9,138	203.421	88,952	17,000	71,959	55,628
Duluth, Winnipeg & Pacific	185	98,063	18,838	122,503	13,762	13,114	1,564	40,205	2,393	5,435	76,474	46,029	6,125	39,904	10,298
El Paso & Southwestern Co	1,027	658.248	123,867	837,010	132,901	112,710	18,434	211,440	6,581	25,177	507.190	329,820	34,889	294,930	125,317
Elgin, Joliet & Eastern	772	1,047,543	4	1,116,962	80,040	171,138	5,706	277,960	.....	21,055	555.892	561,071	35,075	525,996	269,513
Erie	1,988	4,645,960	744,973	5,890,501	438,946	883,268	95,664	1,821,166	33,750	106,138	3,374,478	2,516,023	165,174	2,349,872	1,061,872
Florida East Coast	745	258,315	97,419	403,893	66,665	57,083	6,401	144,004	2,760	21,459	288.125	115,768	18,500	97,254	—19,597
Fort Worth & Denver City	454	364.126	152.760	541,999	55,077	82,737	6,255	155,729	2,813	15,261	317,871	224,128	18,748	205,379	39,989
Galveston, Harrisburg & San Antonio	1,351	863,983	325,606	1,267,829	131,129	143,671	27,974	428,380	11,616	32,460	774.289	493,540	46,269	447,219	253,873
Galveston Wharf	13	.....	.....	115,714	3,614	1,934	380	27,945	52,025	372	86,269	29,445	9,218	20,227	—47,346
Georgia	307	204,175	66,164	291,867	22,709	42,710	13,284	105,659	181	8,595	193,138	98,730	21,497	77,232	17,410

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER, 1915—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	Miscellaneous.	General.	Total.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
Georgia, Southern & Florida	395	$131,345	$60,688	$215,825	$21,681	$35,472	$6,782	$74,944	.....	$10,523	$149,373	$66,452	$10,122	$56,270	$35,300
Grand Rapids & Indiana	575	301,236	112,532	453,807	55,804	70,889	10,830	173,104	$2,127	15,008	327,761	126,047	21,660	104,384	11,745
Grand Trunk Western	347	565,000	168,000	781,944	92,243	107,503	15,770	258,599	5,659	12,315	492,089	289,855	47,070	242,624	166,534
Great Northern	8,102	7,048,191	1,303,184	8,985,580	709,151	743,384	93,187	1,999,204	73,492	108,075	3,709,565	5,276,016	474,493	4,801,338	730,100
Gulf & Ship Island	308	127,694	28,747	196,337	14,328	27,525	2,369	40,401	328	7,665	92,616	103,721	7,786	95,888	52,593
Gulf, Colorado & Santa Fe	1,938	1,154,084	306,238	1,537,501	337,602	199,908	27,527	735,799	.....	35,303	1,332,219	205,282	58,203	146,212	—335,488
Hocking Valley	351	573,615	76,967	698,620	70,681	129,858	8,340	189,623	.....	13,899	412,402	286,217	37,400	248,817	42,609
Houston, East & West Texas	191	104,634	27,269	139,668	25,140	18,970	1,942	49,584	662	3,301	99,568	40,100	5,810	34,252	3,670
Houston & Texas Central	895	533,940	145,476	722,842	78,720	91,024	16,114	203,177	5,394	18,921	412,740	310,102	29,883	280,053	103,417
Illinois Central	4,767	4,550,172	1,125,920	6,093,006	997,348	1,457,580	101,580	1,863,048	29,848	152,606	4,612,833	1,480,173	269,700	1,208,630	130,162
Indiana Harbor Belt	110	.....	.....	356,034	40,091	27,862	2,718	129,545	.....	7,521	207,738	148,297	7,600	139,729	27,325
International & Great Northern	1,160	692,307	167,882	920,779	130,758	141,632	20,054	324,994	2,994	28,594	635,209	285,570	35,000	250,522	38,175
Kanawha & Michigan	177	292,499	31,426	332,184	39,811	69,684	3,207	83,111	63	6,941	202,817	129,366	14,000	115,366	64,645
Kansas City, Mexico & Orient	737	191,545	38,293	241,922	54,544	45,398	8,470	89,393	.....	10,678	208,483	33,439	14,275	19,149	—41,514
Kansas City Southern	837	761,181	123,182	977,184	111,877	93,457	27,686	288,729	.....	36,822	549,202	427,983	46,541	381,236	137,405
Lake Erie & Western	900	511,082	59,309	599,542	66,673	115,993	14,286	189,221	.....	12,463	398,636	200,906	24,800	176,105	113,445
Lehigh & Hudson River	97	178,010	10,004	215,750	22,231	20,931	1,458	60,566	.....	4,187	109,373	106,377	4,200	102,177	50,435
Lehigh & New England	296	293,857	1,145	309,792	36,145	31,202	1,802	67,952	12,776	6,712	143,814	165,978	6,200	159,778	30,462
Lehigh Valley	1,442	4,068,517	336,461	4,639,358	531,207	988,931	80,382	1,450,447	.....	68,375	3,129,842	1,509,516	139,000	1,370,403	117,319
Long Island	398	379,520	581,936	1,115,755	138,440	103,820	11,454	461,910	6,112	29,462	751,198	364,557	78,048	286,248	42,755
Louisiana & Arkansas	279	139,822	15,635	159,376	24,099	23,638	3,152	38,938	.....	3,851	93,678	65,697	7,500	58,174	27,379
Louisiana Railway & Navigation Co	351	165,237	30,710	209,634	30,595	29,789	6,896	62,137	.....	5,535	134,951	74,683	9,500	65,134	43,374
Louisiana Western	208	147,415	52,649	213,280	27,621	35,005	6,701	56,142	1,851	5,995	133,111	80,169	9,925	70,208	37,715
Louisville & Nashville	5,038	3,774,406	901,816	5,023,510	716,014	930,164	105,561	1,448,020	19,981	107,272	3,302,311	1,721,199	190,180	1,530,611	604,900
Louisville, Henderson & St. Louis	200	92,284	35,125	134,899	25,740	17,959	4,835	40,855	.....	3,304	92,692	42,207	3,800	38,394	9,028
Maine Central	1,220	666,816	286,112	1,021,676	145,505	134,328	10,514	333,294	2,854	29,149	655,438	366,238	53,265	31,296	35,392
Michigan Central	1,785	2,283,549	787,652	3,464,282	424,283	492,960	65,901	1,142,707	47,104	65,381	2,238,337	1,225,945	123,000	1,102,196	397,261
Midland Valley	380	119,085	35,413	162,694	25,276	20,226	2,429	48,449	.....	6,053	102,433	60,261	5,359	54,894	13,623
Minneapolis & St. Louis	1,646	746,985	165,037	963,329	113,584	134,380	17,146	334,622	81	20,141	619,954	343,375	39,826	303,247	59,867
Minneapolis & Sault Ste. Marie	4,229	2,796,626	578,157	3,604,580	299,983	342,215	52,976	907,794	14,832	57,767	1,674,241	1,930,339	181,147	1,749,193	436,917
Minn., St. Paul & Sault Ste. Marie	365	74,015	29,831	110,964	28,748	21,919	3,754	36,950	.....	5,804	97,175	13,788	5,800	7,816	16,984
Missouri & North Arkansas	3,865	1,985,142	751,582	2,946,147	464,086	391,895	53,879	890,063	14,427	90,999	1,896,752	1,049,395	144,675	903,979	—158,228
Missouri, Kansas & Texas System	334	111,742	20,067	137,845	37,896	22,763	4,294	53,486	110	7,398	121,914	15,931	5,128	10,223	18,125
Missouri, Oklahoma & Gulf	125	20,773	485	21,396	3,453	1,780	1,950	11,695	.....	1,590	20,469	927	142	786	—6,252
Missouri, Oklahoma & Gulf Ry. of Texas	3,931	2,203,728	449,510	2,881,998	490,948	559,623	65,864	983,899	10,627	56,825	2,166,276	715,722	99,418	612,948	—9,507
Missouri Pacific	1,122	889,429	108,591	1,042,922	108,066	237,258	35,770	344,738	2,524	33,217	761,573	281,349	28,386	252,850	62,582
Mobile & Ohio	72	147,227	2,333	151,848	13,271	9,105	791	29,922	.....	3,148	56,238	95,610	2,500	93,110	.....
Monongahela	405	262,211	80,932	372,796	55,825	66,355	10,647	133,954	2,244	11,538	280,554	92,242	20,881	71,252	—3,312
Morgan's La. & Texas R. R. & S. S. Co	1,231	821,801	218,074	1,121,133	109,088	220,861	49,663	368,514	8,893	35,474	792,288	328,845	26,000	302,824	141,822
Nashville, Chattanooga & St. Louis	165	130,723	11,394	146,228	21,758	15,670	538	26,955	137	4,416	69,475	76,753	6,402	70,352	54,806
Nevada Northern	204	261,123	53,680	370,851	40,831	57,406	10,531	108,428	5,543	11,139	233,878	136,973	15,100	121,873	72,568
New Orleans & North Eastern	402	157,558	24,269	190,353	28,009	29,228	4,670	51,145	—12	6,790	119,830	70,523	6,954	63,415	37,147
New Orleans, Mobile & Chicago	285	102,745	28,272	144,044	18,829	24,954	2,912	41,379	189	6,251	94,513	49,531	4,089	45,395	1,534
New Orleans Great Northern	286	115,384	25,459	147,692	24,851	22,817	4,007	46,997	.....	10,069	108,741	38,951	1,501	37,331	28,837
New Orleans, Texas & Mexico	5,969	11,381,004	3,916,121	17,765,670	1,754,927	2,949,966	239,653	5,111,838	235,496	344,319	10,636,199	7,129,471	792,450	6,336,203	.....
New York Central Railroad	569	1,071,248	115,594	1,232,820	87,294	209,002	43,618	456,877	4,307	20,573	821,670	411,150	42,000	369,120	173,278
New York, Chicago & St. Louis	2,005	3,308,396	2,510,957	6,532,914	718,621	881,895	36,049	2,237,691	70,906	150,669	4,095,386	2,437,528	240,000	2,196,853	654,989
New York, New Haven & Hartford	568	569,288	91,063	765,457	114,634	127,027	7,031	282,242	.....	15,768	546,702	218,755	20,983	197,761	51,826
New York, Ontario & Western	112	306,281	33,334	365,495	30,713	79,819	5,422	132,513	3,885	11,321	263,672	101,823	12,500	89,298	42,064
New York, Philadelphia & Norfolk	140	215,103	49,850	294,272	26,445	30,648	2,279	126,997	.....	5,005	191,369	102,903	15,114	87,732	17,180
New York, Susquehanna & Western	2,047	4,232,291	498,239	4,888,127	563,740	813,566	55,471	1,187,535	8,802	73,227	2,674,160	2,213,967	168,000	2,045,876	1,038,777
Norfolk & Western	908	277,399	89,183	392,294	50,672	53,928	7,002	128,343	78	19,510	259,533	132,760	12,253	120,455	41,196
Norfolk Southern	6,509	5,465,463	1,142,497	7,166,396	835,014	570,591	87,556	1,773,185	77,158	88,075	3,375,988	3,790,408	411,508	3,378,719	797,734
Northern Pacific	507	192,788	187,551	420,948	54,812	44,424	5,428	125,720	.....	7,830	236,477	184,471	17,194	167,005	86,294
Northwestern Pacific	114	52,498	21,302	79,526	8,174	8,434	684	21,341	.....	3,958	42,500	36,936	7,250	29,686	6,191
Oahu Railway & Land Co	2,259	1,980,154	389,587	2,530,705	252,647	235,187	36,780	490,135	29,524	52,593	1,096,670	1,434,035	147,718	1,286,678	724,902
Oregon Short Line	2,027	1,191,017	381,739	1,691,601	239,854	170,542	47,334	448,455	12,089	57,052	972,693	718,908	90,798	627,956	119,769
Oregon-Washington R. R. & Nav. Co	670	371,212	84,023	477,649	87,133	69,751	3,923	106,477	.....	9,830	276,499	201,150	12,819	188,331	84,881
Panhandle & Santa Fe	1,757	4,887,936	872,316	6,344,042	922,807	979,714	75,015	1,874,879	32,600	115,797	4,000,812	2,343,229	248,391	2,093,923	1,123,904
Pennsylvania Company	4,528	14,071,160	3,385,879	19,098,095	2,282,540	3,603,200	192,763	6,411,079	225,892	441,434	13,156,908	5,941,188	618,389	5,316,127	1,556,732
Pennsylvania Railroad	2,248	1,350,640	309,690	1,812,922	140,781	350,223	28,648	605,150	4,027	39,683	1,168,405	644,517	47,306	596,482	95,968
Pere Marquette	1,120	4,352,362	591,010	5,169,046	382,919	737,217	54,093	1,569,121	12,794	86,333	2,840,062	2,328,985	100,477	2,227,928	836,878
Philadelphia & Reading	717	1,029,548	741,403	1,957,089	265,632	346,979	25,165	712,100	30	50,545	1,400,451	556,638	54,513	501,127	168,548
Philadelphia, Baltimore & Washington	225	1,739,914	145,652	1,989,801	133,398	287,507	12,367	367,762	3,073	28,193	832,301	1,157,500	49,500	1,107,999	630,119
Pittsburgh & Lake Erie	1,479	2,907,230	718,243	4,071,180	544,204	692,452	62,351	1,279,102	26,244	87,473	2,691,826	1,379,353	163,727	1,215,276	510,332
Pittsburgh, Cincinnati, Chic. & St. Louis	294	221,381	8,093	232,312	31,561	47,745	1,511	48,310	.....	4,272	146,490	85,822	2,057	83,765	62,489
Pittsburgh, Shawmut & Northern	21	145,885	.....	172,047	9,052	13,679	38	61,402	.....	153	71,233	100,814	10,000	90,814	43,912
Port Reading	88	113,545	81,854	224,921	20,842	26,124	4,146	79,914	1,754	7,120	139,900	85,021	7,586	77,422	22,879
Richmond, Fredericksburg & Potomac	468	193,086	111,797	346,019	43,227	47,252	9,990	109,224	1,121	6,091	216,904	129,115	16,859	112,256	25,843
Rutland	258	134,994	25,999	170,857	32,031	20,163	4,842	50,733	.....	10,463	118,232	52,624	7,620	44,977	18,800
St. Joseph & Grand Island	4,750	2,839,354	933,138	4,019,472	588,558	590,293	64,258	1,209,225	.....	92,968	2,528,418	1,491,054	180,155	1,308,626	163,436
St. Louis & San Francisco	548	158,209	63,230	237,754	42,317	28,985	5,600	69,407	.....	10,245	156,428	81,326	6,500	74,692	41,192
St. Louis, Brownsville & Mexico															

MEETINGS AND CONVENTIONS

The following list gives names of secretaries, date of next or regular meetings, and places of meeting of those associations which will meet during the next three months. The full list of meetings and conventions is published only in the first issue of the Railway Age Gazette for each month.

AIR BRAKE ASSOCIATION.—E. M. Nellis, 53 State St., Boston, Mass. Next convention, May 2-5, 1916, Atlanta, Ga.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—E. H. Fritch, 900 S. Michigan Ave., Chicago. Next convention, March 21-23, 1916, Chicago.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—Chas. Warren Hunt, 220 W. 57th St., New York. Regular meetings, 1st and 3d Wednesday in month, except July and August, 220 W. 57th St., New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—Willis H. Failing, Terminal Station, Central of New Jersey, Jersey City, N. J. Next meeting, May 17, 1916, Hotel Traymore, Atlantic City, N. J.

CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk, P. O. Box 7, St. Lambert (near Montreal), Que. Regular meetings, 2d Tuesday in month, except June, July and August, Windsor Hotel, Montreal, Que.

CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 176 Mansfield St., Montreal, Que. Regular meetings, 1st Thursday in October, November, December, February, March and April. Annual meeting, January, Montreal.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 Lawlor Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, Hotel La Salle, Chicago.

CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York. Regular meetings, 2d Friday in January, May, September and November. Annual meeting, 2d Thursday in March, Hotel Statler, Buffalo, N. Y.

ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—Elmer K. Hiles, 2511 Oliver Bldg., Pittsburgh, Pa. Regular meetings, 1st and 3d Tuesday, Pittsburgh, Pa.

FREIGHT CLAIM ASSOCIATION.—Warren P. Taylor, Traffic Manager, R. F. & P., Richmond, Va. Annual session, May 17, 1916, Washington, D. C.

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Station, Chicago. Regular meetings, Wednesday, preceding 3d Thursday in month. Room 1856, Transportation Bldg., Chicago.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—J. G. Crawford, 547 W. Jackson Blvd., Chicago. Annual meeting, May 15-18, Hotel Sherman, Chicago.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York. Annual convention, May 23-26, 1916, Hollenden Hotel, Cleveland, Ohio.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, 349 People's Gas Bldg., Chicago. Next convention, March 21-23, 1916, Chicago.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meeting, 2d Tuesday in month, except June, July, August and September, Boston.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.

NIAGARA FRONTIER CAR MEN'S ASSOCIATION.—E. N. Frankenberger, 623 Brisbane Bldg., Buffalo, N. Y. Meetings, 3d Wednesday in month, New York Telephone Bldg., Buffalo, N. Y.

PEORIA ASSOCIATION OF RAILROAD OFFICERS.—M. W. Rotchford, 410 Masonic Temple Bldg., Peoria, Ill. Regular meetings, 3d Thursday in month, Jefferson Hotel, Peoria.

RAILROAD CLUB OF KANSAS CITY.—Claude Manlove, 1008 Walnut St., Kansas City, Mo. Regular meetings, 3d Saturday in month, Kansas City.

RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Room 207, P. R. R. Sta., Pittsburgh, Pa. Regular meetings, 4th Friday in month, except June, July and August, Monongahela House, Pittsburgh.

RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, Myers Bldg., Bethlehem, Pa. Midyear meeting, March 20, Chicago. Next annual convention, September, 1916, Grand Hotel, Mackinac Island, Mich.

RAILWAY STOREKEEPERS' ASSOCIATION.—J. P. Murphy, N. Y. C. R. R., Box C, Collingwood, Ohio. Annual meeting, May, 1916.

RICHMOND RAILROAD CLUB.—F. O. Robinson, C. & O., Richmond, Va. Regular meetings, 2d Monday in month, except June, July and August.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August, St. Louis.

SALT LAKE TRANSPORTATION CLUB.—R. E. Rowland, David Keith Bldg., Salt Lake City, Utah. Regular meetings, 1st Saturday of each month, Salt Lake City.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, A. & W. P. R. R., Atlanta, Ga. Next meeting, April, 1916.

SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grant Bldg., Atlanta, Ga. Regular meetings, 3d Thursday, January, March, May, July, September, November, 10 A. M., Piedmont Hotel, Atlanta.

TOLEDO TRANSPORTATION CLUB.—Harry S. Fox, Toledo, Ohio. Regular meetings, 1st Saturday in month, Boody House, Toledo.

TRAFFIC CLUB OF CHICAGO.—W. H. Wharton, La Salle Hotel, Chicago.

TRAFFIC CLUB OF NEWARK.—Roy S. Bushy, Firemen's Bldg., Newark, N. J. Regular meetings, 1st Monday in month, except July and August. The Washington, 559 Broad St., Newark.

TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 291 Broadway, New York. Regular meetings, last Tuesday in month, except June, July and August, Waldorf-Astoria Hotel, New York.

TRAFFIC CLUB OF PITTSBURGH.—D. L. Wells, Gen'l Agt., Erie R. R., 1924 Oliver Bldg., Pittsburgh, Pa. Meetings, bi-monthly, Pittsburgh.

TRAFFIC CLUB OF ST. LOUIS.—A. F. Versen, Mercantile Library Bldg., St. Louis, Mo. Annual meeting in November. Noonday meetings, October to May.

TRANSPORTATION CLUB OF DETROIT.—W. R. Hurley, Superintendent's office, N. Y. C. R. R., Detroit, Mich. Meetings monthly, Normandie Hotel, Detroit.

UTAH SOCIETY OF ENGINEERS.—Frank W. Moore, 1111 Newhouse Bldg., Salt Lake City, Utah. Regular meetings, 3d Friday in month, except July and August, Salt Lake City.

WESTERN CANADA RAILWAY CLUB.—L. Kon, Immigration Agent, Grand Trunk Pacific, Winnipeg, Man. Regular meetings, 2d Monday, except June, July and August, Winnipeg.

WESTERN RAILWAY CLUB.—J. W. Taylor, 1112 Karpen Bldg., Chicago. Regular meetings, 3d Tuesday in month, except June, July and August, Grand Pacific Hotel, Chicago.

WESTERN SOCIETY OF ENGINEERS.—E. N. Layfield, 1735 Monadnock Block, Chicago. Regular meetings, 1st Monday in month, except January, July and August, Chicago. Extra meetings, except in July and August, generally on other Monday evenings. Annual meeting, 1st Wednesday after 1st Thursday in January, Chicago.

Traffic News

The Ann Arbor Railroad has announced that its car ferry between Frankfort and Menominee, Mich., will begin running on April 1.

The spring meeting of the National Industrial Traffic League is to be held at the Hotel Belvidere, Baltimore, Md., on April 6 and 7.

The Birmingham (Ala.) Traffic & Transportation Club at its annual meeting held last week chose T. L. Hill, agent of the Southern Railway, president for the ensuing year, and J. W. Bryan, traffic agent of the Birmingham Southern, secretary.

The various changes in the Southern Classification, adopted at the January meeting at Pensacola, Fla., are to be published in Southern Classification No. 42, which is now being compiled by the Atlanta office. No further supplements to classification No. 41 will be issued.

The Chicago, Burlington & Quincy has notified the Nebraska Railway Commission that it would lift its embargo on wheat and is now ready to accept the grain for shipment. For some time the road has rejected wheat shipments in Nebraska in order to care for more pressing demands on its rolling stock.

The sweeping embargo on freight shipments to Philadelphia, placed by the Pennsylvania Railroad last week, was lifted, as to a part of the city, on March 3; and on the 7th 30 of 34 stations in the city were cleared so as to warrant a further modification; but on coal to certain districts and on all shipments for certain steamer lines and certain warehouses the embargo is still in force.

The Chicago & North Western has put in service between Chicago and Madison, Wis., a new car containing a spacious observation parlor, the forward end of which provides space for two tables seating eight people, where meals can be served from a buffet occupying the center of the car. Odors and smoke are carried out through the roof by an exhaust fan. A ladies' dressing room and a large smoking room for men occupy the balance of the car.

Eleven of the railroads entering Kansas City have adopted a plan for centralized city offices, to be opened in about six months, between Seventh and Eighth streets on Walnut street. The Walnut street side of the Midland building will be remodeled and a four-story building erected south of it to accommodate the new officers. Each road will have an individual office on the first floor of the Midland building or in the four-story annex to be built. At present the ticket offices of the roads are scattered throughout the business district. The Union Pacific has not entered into the plan for the centralized offices but will keep its present location at Ninth and Walnut streets.

The Oregon Public Service Commission has issued a circular to shippers urging them to make every effort to do their part toward preventing an increase in car shortage. The commission requests shippers in loading cars to fill them 10 per cent above the marked capacity in order that no more cars than are absolutely needed may be required for their shipments, and to give the railroad company immediate notice when the car is released. The commission says: "The transportation situation in Oregon, owing to our unique location in the western end of the transcontinental lines, and to the preponderance of eastbound traffic, has become acute in the extreme." The commission has instituted inquiries in all parts of the state to ascertain the exact situation as to the shortage.

The Southern Railway announces that its South American agent, whose office is at Chattanooga, is to make his headquarters a co-operative branch of the United States Department of Commerce. He will have on file a complete library and collection of the publications of the department of commerce, and will also receive the confidential circulars regarding foreign trade opportunities, and all other information which the department sends to its co-operative district offices. Of these offices there are only seven in the United States. They are located at Cleveland, O.; Cincinnati, O.; Los Angeles, Cal.; Detroit, Mich.; Philadel-

phia, Pa.; Davenport, Iowa, and Chattanooga. All publications of the department of commerce can be bought at the official price at the Chattanooga office.

The Commission on Car Shortage of the American Railway Association has given the eastern roads a distinct intimation that it will impose penalties upon such of them as continue to disregard the commission's suggestions for delivering box cars to western roads to ameliorate the present car shortage in the West. The notice says: "Notice is now given that unless such deliveries are made and maintained in substantial accord with the recommendation of the commission it will be necessary for the commission to exercise the powers given it by the American Railway Association of imposing penalties upon delinquents for non-observance of car service rules."

The contract made by the Santa Fe to carry 250,000 tons of sugar from San Francisco to the Atlantic seaboard by rail was noticed March 3. The first trainload of this sugar, raw Hawaiian cane sugar, arrived at the Port Richmond freight yards of the Philadelphia & Reading, Philadelphia, on Wednesday of this week. The shipment established a new record for freight trains carrying non-perishable freight by making the run in fourteen days. Not only the scarcity of ships and the increased ocean freight rates, but also the saving in time, influenced the Hawaiian planters to transport their product by rail. By the all-water route from Honolulu fifty-six days would be required. By water and rail the time was only 23 days.

In reply to a letter sent by Governor Capper of Kansas to the managers of the railways in that state, officers of a number of the roads have telegraphed or written to the governor, stating that they are putting forth extraordinary efforts to relieve the car shortage. Charles Ware, general manager of the Union Pacific, said that the Union Pacific System owns 40,376 cars, of which 58 per cent are box cars, and at this time the road is short approximately 11,000 cars, having on its rails only 19,403 of its own cars, and 10,068 foreign cars. The shortage is principally due, he says, to the large number of cars tied up in Eastern territory. T. H. Beacom, general manager of the Chicago, Rock Island & Pacific, stated that there were some 6,000 cars tied up at Galveston, and a like number at New Orleans, with probably 50,000 to 70,000 cars on Eastern lines belonging to Western lines that cannot be released on account of the congestion.

Rock Island Reclamation Committee

The Chicago, Rock Island & Pacific, in a statement issued by A. C. Ridgway, chief operating officer, has announced the organization of a reclamation committee, consisting of C. A. Morse, chief engineer, chairman; W. J. Tollerton, general mechanical superintendent, and C. H. Rost, general storekeeper. The committee will have full authority over the collection and reclamation of all usable material and scrap, and its use and disposition.

French Fuel Binder.—A fuel binder recently patented by a French maker, which is fusible to a vitreous mass at 200 deg. Cent., consists of 15 parts of glassmaker's sand, 18 parts of Portland cement, and 10 parts of carbonate of soda or other flux for silica, such as sea salt or sulphate of soda. Dry fuel dust, such as coal in grains up to 5 mm. in size, is mixed with from 4 to 6 per cent of the mixed binding ingredients, the product, with the addition of 8 per cent of water, being compounded in a mixer to which steam under 8 kilos. pressure, at 170 deg. Cent., is admitted, the mass subsequently being pressed into briquettes. Heat may be applied to the material issuing from the press to increase the cohesion.—*Engineer* (*London*).

Corrosive Effect of Acetylene.—With the increasing use of acetylene gas the risks of its corrosive effect on pipes and metal containers should be better known. Tests have shown that most acetylene, as generated, attacked zinc, lead, brass and nickel to a slight extent; iron was affected six to seven times as much; but copper suffered more than any other metal tested. Copper was quickly changed into a soft, porous black mass. Tin, aluminum, bronze, german silver and solder were practically unaffected. Thus it would appear that copper and brass or other copper alloys should not be used as piping for acetylene-gas supplies, and that iron should be well tinned rather than galvanized or nickel plated.—*American Machinist.*

Commission and Court News

INTERSTATE COMMERCE COMMISSION

Rates on Matches From Duluth

Opinion by the commission:

The commission refuses to allow the carriers to cancel joint commodity rates on matches in carloads ranging from 59 cents to 81 cents per 100 lb. from Duluth, Minn., to Little Rock, Hot Springs, Fort Smith and certain other points in Arkansas. (38 I. C. C. 103.)

Passenger Fares from Milwaukee, Wis.

Opinion by the commission:

The commission refuses to allow the Crosby Transportation Company, operating boat lines between Milwaukee and Grand Haven and Muskegon to cancel joint passenger fares from Milwaukee to Coopersville, Nunica and Muskegon, points on the Grand Rapids, Grand Haven & Muskegon Railway, an electric line. The proposal to cancel these fares resulted largely from a dispute as to divisions. (38 I. C. C., 98.)

Minimum Weight on Potatoes

Opinion by the commission:

The commission orders the cancellation of tariffs proposing an increase from 24,000 lb. to 30,000 lb. in the minimum weight on shipments from East St. Louis, Ill., to points north of the Ohio river and east of the Illinois-Indiana state line, of potatoes originating in Louisiana and Texas. The report says that this commodity does not load safely in excess of 24,000 lb. per standard car. (38 I. C. C., 101.)

Melon Refrigeration Charges

Opinion by Commissioner Hall:

The commission finds that the carriers have justified proposed increased refrigeration charges on shipments of melons from points on the Colorado Midland in western Colorado, and from what are designated as the western Colorado and Utah groups on the Denver & Rio Grande to destinations throughout the greater part of the United States and Canada. The present refrigeration charges on melons are the same as on vegetables and fruits. Melons require more ice, and in most sections of the country refrigeration charges on shipments of melons range from $5 to $20 in excess of those on shipments of other fruits and vegetables. (38 I. C. C., 62.)

Official Classification Rates on Paper

Opinion by Commissioner Harlan:

Both shippers and carriers have found considerable dissatisfaction with the rates on paper, and with the rate relationship between the various classes of that commodity. Considering changes proposed by the carriers to put these rates on a better basis, the commission holds:

Proposed increased rates on printing paper, wrapping paper, blotting paper, cardboard, tag board, paper bags and blank register paper in official classification territory, equivalent to the sixth-class rates, are found to be reasonable, but certain proposed departures from the sixth-class basis are disapproved.

A proposed increase from 18.9 cents to 21 cents per 100 lb. in the blanket rate on news print paper from New England and northern New York to points in central freight association is found not justified, but a rate of 20 cents per 100 lb. is found to be reasonable. Proposed increased rates on the same commodity from Alexandria, Ind., and Cheboygan, Mich., to eastern points are found not to have been justified.

Proposed increased rates on strawboard, paper boards, and building and roofing paper are found not to have been justified.

Proposed increased rates on blank wall paper are not found to be reasonable, but respondents are permitted to increase the rates on that commodity to the same basis as that approved herein on news print paper.

A complaint alleging that rates on paper from mills in Wisconsin to points in central freight association territory and other points are unreasonable and unjustly discriminatory is dismissed.

Rates on paper from New England are held not shown to be unreasonable, and it is believed that the cause of complaint as to the discriminatory character of the rates and descriptions published by the New England lines are apparently removed by suspended tariffs. Reparation denied, and complaint dismissed. (38 I. C. C., 121.)

STATE COMMISSIONS

The Atchison, Topeka & Santa Fe has filed an application with the Arizona Corporation Commission for authority to make a horizontal increase of 20 per cent in its intrastate freight rates.

The Kansas Public Utilities Commission began a hearing on February 29, at Topeka, for the purpose of hearing new evidence on the application of the railroads in Kansas for authority to increase their intrastate passenger fares to three cents a mile.

The Public Utilities Commission of Colorado has ordered the maintenance of bulletin boards at all passenger stations to show the time of passenger trains. At train-order offices notes of late trains must be posted one hour before the time the train is due to arrive, or earlier if the train despatcher has the information; and where a train is far behind time the information concerning it must be restated on the bulletin every 30 minutes.

The Public Utilities Commission of Colorado, by general order No. 13, has directed that all safety devices at crossings be kept in good order, that new devices of this kind shall be installed only after approval of the plan by the commission, and that all steam and electric railroads immediately remove from their rights of way all obstructions of every kind, except buildings, which interfere with the view of approaching trains at highway crossings.

The Iowa Railroad Commission has issued a circular addressed to shippers urging co-operation to alleviate the effect of a car shortage. The commission advises shippers to load cars to capacity, especially in the case of grain shipments, and says that shippers should not order any more box cars than they can use within 24 hours after they are furnished, and that cars should be unloaded and billed out promptly. Carriers are urged to place cars promptly for loading and unloading, and to pick up cars on the first available train after shipping orders are given.

The Railroad Commissioners of Canada, acting under the authority of an amendment to the Railway Act, which was rushed through Parliament last week, and which is designed to facilitate the shipment of wheat from congested branch line districts in the west, has issued an order dealing with the situation in the Goose Lake district in Saskatchewan, where conditions are worse than elsewhere. The Canadian Northern is ordered to provide 1,200 cars and 36 additional locomotives for the immediate movement of the grain in this district. The grain is destined to eastern points over the Grand Trunk Pacific. The Canadian Northern is ordered to maintain this additional equipment on the line, serving the Goose Lake district until the congestion is relieved. The judgment of the Commission leaves it to the two railways concerned to agree to the proportions of rates for the carriage of the grain.

The Tennessee Railroad Commission on February 26 ordered many changes in freight rates on lines west of Nashville—the Nashville, Chattanooga & St. Louis, the Illinois Central, the Southern, the Mobile & Ohio, the Louisville & Nashville, the Cincinnati, New Orleans & Texas Pacific, and the Tennessee Central. The rates filed by the companies were intended to make their intrastate rates conform to the changes in interstate tariffs made necessary by the long and short haul order of the Interstate Commerce Commission. They were also intended to remove unjust discriminations, and to forestall the filing of numerous complaints. It was pointed out by the railroads in the hearings that it was not intended to derive additional revenue; some rates had been lowered, balancing the raising of others. The State Commission held that the revision was necessary, and that the method of the carriers was right in principle—"but, in order that the revision may not take the complexion of a scheme to increase the rates," said the commission, "the scale of rates presented by the carriers for a distance of 100 miles will be reduced, and at the same time given a wider spread, thereby preserving the continuity of rates."

The Maryland Public Service Commission has issued an order regulating the running of trains of the Western Maryland during repairs on the tunnel of the Philadelphia, Baltimore & Washington (Pennsylvania) in Baltimore, which will necessitate the suspension of traffic on one of the tracks in the tunnel for a part of the time during the next year or more. The Western Maryland track joins the P., B. & W. at Fulton station near the west end of the tunnel and uses the P. B. & W. tracks through the tunnel to the Union station. During the time that the repair work is going on, the trains of the Western Maryland will be run over the Pennsylvania (Central division) from Owings Mills, 15 miles north of Baltimore, traveling over the Green Spring Valley branch of the Pennsylvania, between Green Spring junction and Hollins. The order of the commission requires that shuttle trains shall be run between Fulton and Green Spring Valley junction, and a suitable station maintained at the junction, with separate waiting rooms for men and women. The Pennsylvania is required to erect gates with day and night watchmen at three highway crossings on the branch and to install automatic signals, "similar to the Hall signal which gives both visual and audible warning," at six other crossings; and to have flagmen at all of the crossings until the gates and the signals are in operation.

PERSONNEL OF COMMISSIONS

George H. Bremner, assistant district engineer, central district, division of valuation, Interstate Commerce Commission, with office at Chicago, has been appointed district engineer for the same district, vice De Witt V. Moore, resigned. Mr. Bremner was born at Marshalltown, Iowa, on December 7, 1861, and graduated from the University of Iowa with the degree of C.E., in 1883. He entered railway service in 1880 as a draftsman on construction work for the Chicago, Burlington & Quincy. In June, 1883, he entered the employ of the Chicago, St. Paul & Kansas City as a rodman on construction; from September, 1883, to May, 1884, he was transitman on maintenance of way for the Chicago & North Western; from May to July, 1894, transitman on preliminary surveys for the Chicago, Burlington & Quincy; from August to November, 1885, draftsman on construction for the Chicago, Burlington & Northern. He was appointed division engineer maintenance of way for the Chicago, Burlington & Quincy in December, 1885, and remained in this position until April, 1889. From the latter date until June, 1890, he was transitman in charge of a party on location for the St. Louis, Keokuk & North Western (now a part of the Burlington System), an extension from old Monroe to St. Louis, Mo. From July, 1890, to June, 1902, he was assistant engineer on maintenance of way for the Burlington at Chicago; from June, 1902, to November, 1904, he was engineer of the Illinois district of the same road; from November, 1904, to April, 1908, engineer maintenance of way of the Illinois district, same road; from April, 1908, to February 1, 1914, he was again engineer of the Illinois district of the Burlington. Since leaving the Burlington he has been assistant district engineer, central district, division of valuation of the Interstate Commerce Commission at Chicago. His appointment as district engineer took effect on March 1.

G. H. Bremner

W. E. Van Hook, cost engineer, central district division of valuation, Interstate Commerce Commission, Chicago, has been

appointed assistant district engineer, vice G. H. Bremner, promoted. He was born at Pittsburgh, Pa., on May 7, 1879, and received his first railway experience between 1900 and 1902, when he was engaged in construction work on the Pittsburgh & Lake Erie, and later on the Choctaw, Oklahoma & Gulf. After severing his connection with the latter road he entered the University of Wisconsin and graduated from the college of engineering with the class of 1906. During a short period in the summer of 1906 he did valuation work for the Chicago & North Western. In October, 1906, he entered the service of the Chicago & Alton, having charge of bridge construction work until March, 1907, when he entered the employ of the Chicago, Milwaukee & Puget Sound as resident engineer in North Dakota, remaining in this position until April, 1908. From November, 1908, to March, 1909, he was location engineer for the Enid, Ochiltree & Western. In March, 1909, he was appointed assistant engineer in charge of double tracking for the Chicago & Alton between Bloomington and Atlanta, Ill. In August, 1910, he was transferred to Chicago, where he was chief draftsman for the same railroad. He was appointed assistant engineer of the Illinois Railroad Commission in July, 1911, and in August, 1914, entered the service of the Interstate Commerce Commission as office engineer, later being appointed cost engineer. His appointment as assistant district engineer was effective on March 1.

COURT NEWS

Change of Grade—Damages

The New York Court of Appeals holds that where the common council of a city, acting through a railroad company, changes the grade of a street upon the reconstruction of a viaduct, and the change is for a public purpose, the railroad company is not liable to abutting owners for damages.—Rigney v. N. Y. C. (N. Y.), 111 N. E., 226.

Excessive Damages

The Pennsylvania Supreme Court holds that where, in an action under the federal employers' liability act, the trial court is convinced that the jury has erred in fixing the proportion of the blame due to the defendant's negligence and the plaintiff's contributory negligence, it should not hesitate to order a reduction of damages or grant a new trial.—Waina v. P. R. R. (Pa.), 96 Atl., 461.

Crossing Accident—Contributory Negligence

The New Jersey Supreme Court holds that a pedestrian injured at a crossing where the view of the tracks was practically unobstructed for 250 feet, who either did not look, or else looked so perfunctorily, that he was not conscious of the approach of an engine, was guilty of contributory negligence by failing to use the reasonable degree of care for his own safety, which the law requires of all persons approaching railroad crossings.—Lynch v. P. R. R. (N. J.), 96 Atl., 395.

"Steam Railroad Company" Defined

The New Jersey Supreme Court holds that the statutory expression "steam railroad company" is not intended to indicate the motive power, but to describe companies incorporated under the general railroad law, or under special charters having similar characteristics, and running their trains over their own rights of way, crossing all highways between their terminal points, as distinguished from street railway companies operating trolley cars along the highways of the state.—Lynch v. P. R. R. (N. J.), 96 Atl., 395.

Cancellation of Charges for Shipper's Services

Under Corp. St. 1913, section 8,509, requiring carriers to file with the Interstate Commerce Commission tariffs showing all rates, all privileges allowed, and all regulations affecting rates, the Circuit Court of Appeals, fifth circuit, holds that a carrier cannot pay a shipper for the shipper's services in the wharfage and handling of goods unless the charges therefor are specified in a duly published tariff. Where, in a proceeding before it, the commission ordered a tariff cancelled, the commission's decision eliminated such allowances from the filed tariff. And as it would have been a violation of law for the carrier to voluntarily pay a shipper for such services, the shipper was not entitled to a judgment requiring the carrier to pay for such services.—Southern Cotton Oil Co. v. Central of Georgia, 228 Fed., 335.

Lawrenceville Physical Connection Order Upheld

The United States Supreme Court has sustained the order of the Georgia Railroad Commission, made under its express statutory authority, requiring physical connection to be made with sufficient interchange tracks between Lawrenceville Branch Railroad and Seaboard Air Line at Lawrenceville (a manufacturing town with 2,000 inhabitants), the expense to be borne equally between the two companies.—Seaboard Air Line v. Railroad Commission. Decided February 21, 1916.

Infant Trespassers on Tracks

The Kentucky Court of Appeals holds that men in charge of a train running through a rural community not thickly settled are not, at points on the tracks away from any regular crossing, required to maintain a lookout for trespassers who may be on the track, and to have the train under such control that it can be promptly stopped, even though persons in that vicinity use the tracks as a highway. An infant strayed upon such a track and was run down and killed because those in charge of the train maintained no lookout, and did not have the train under such control that they could stop it when the child's presence was discovered. The company was held not liable. An infant trespasser on railroad tracks has no greater rights than any other.—McKnight's Admr. v. L. & N. (Ky.), 181 S. W., 947.

Privilege Taxes Upheld

By chapter 135 of the laws of 1913, of Kansas, every domestic and foreign corporation is required to pay to the Secretary of State an annual fee graduated according to the amount of its paid-up capital stock. When the capital does not exceed $10,000, the fee is $10; between that sum and $25,000, the fee is $25; and so on until the maximum fee is reached, which is payable in all cases where the paid-up capital stock exceeds $5,000,000. Two railroads paid the tax under protest. One, the Kansas City, Fort Scott & Memphis, a domestic corporation, with a road extending into several states, and having a paid-up capital stock of $31,600,000, and the other the St. Louis & San Francisco (by its receivers), a foreign corporation, whose capital stock also exceeds $5,000,000. Both brought actions to recover the money paid. The United States Supreme Court, affirming the judgments of the Kansas Supreme Court, holds that the tax is valid, being merely a tax on the privilege of being a corporation—on the primary corporate franchise granted by the state, and not in any sense a tax imposed on interstate commerce.—K. C., F. S. & M. v. Botkin; Lusk v. Botkin. Decided February 21, 1916.

Suction by Moving Trains Theory

In an action against a railroad it appeared that the plaintiff was walking on a parallel track used by another road and upon the ends of the ties next to the defendant's track, about 5½ feet from the ends of the ties on the defendant's track, when he was overtaken and run over by a heavy freight train drawn by two engines on an upgrade and a partial curve. The train, which had stopped for water at a tank about 485 feet back, was running from 3 to 25 miles an hour. The plaintiff testified that he was drawn under one of the cars by the suction caused by the speed of the train, and his leg smashed. There was evidence that no suction could have been produced at the speed the train was going, and that even at a greater speed than 30 miles an hour, trains had frequently passed close to section hands repairing the track without any such effect being produced; also that the effect produced by a rapidly moving train would be merely to split the air and drive objects away from it, such as dust from the track and hats from the heads of men standing near it, the force of the wind being away from the train rather than towards it. The jury returned a verdict for the plaintiff, which the trial court set aside, for the reason that there was no evidence to support it, and entered a judgment of non-suit. On appeal this was affirmed by the North Carolina Supreme Court in an exhaustive opinion. The court held that the plaintiff's injury, if occurring as the result of suction created

by the rapidly moving train, was an unusual occurrence such as the engineer could not have reasonably expected would result from the rapid movement of the train, and hence such movement was not negligence.—Davis v. Southern (N. Car.), 87 S. E., 745.

Liability of Shipping Agent for Railroad Storage Charges

The contract between the New York Central and a shipping company at Boston provided that the carrier should not be liable for any delays due to strikes, riots or stoppage of labor, and that through freight left in the road's hands 24 hours after arrival would be subject to storage charges. The railroad had filed with the Interstate Commerce Commission a storage tariff providing thirty days free storage and a charge of 20 cents a ton monthly to be charged thereafter. Owing to a strike of the shipping company's men certain goods remained in the railroad's yards for more than thirty days. The agents of the companies had a conference while the storage charges were accruing. The railroad was reluctant to impose the charges on the shipping company; but was legally bound to collect the storage from somebody. Ultimately the shipping company's manager agreed that if the Interstate Commerce Commission should decide that the storage charges were collectible, he would undertake to pay them, so that it would not be necessary for the railroad to go to the shippers. The railroad urged the commission to waive the charges; but the commission refused. In an action by the railroad to recover the charges the Massachusetts Supreme Court holds that the shipping company was liable for them under the express agreement of its manager.—New York Central v. Frederick Leyland & Co. (Mass.), 111 N. E., 285.

Reading's $1.35 Rate on Cement from Evansville to Jersey City Sustained

In the Jersey City cement rate case the Supreme Court of the United States has reversed the Interstate Commerce Commission. In 1912 complaint was made by the Allentown Portland Cement Company to the Interstate Commerce Commission of the rate of $1.35 charged for the carriage of cement from Evansville to Jersey City. Evansville is reached only by the Reading, which distributes the cement among other roads at Allentown. Certain of these roads also serve other mills in the same general vicinity at Allentown, namely, the Lehigh district, either directly or through connections. The rate from these other mills to Jersey City is 80 cents. The Reading does not participate in the 80-cent rate from any mill in the district. The commission found that discrimination was practiced against Jersey City, and ordered the railroads to file rates which would not be discriminatory. The Reading sought annulment of the order. The Federal district court, E. D. Pennsylvania, dismissed the company's bill, 219 Fed. 988. The United States Supreme Court has now reversed that decree, holding that Jersey City is not unduly discriminated against. "Undue discrimination against itself or the locality of its plant," the court said, "as alleged by the cement company, was not found; the community declared to be prejudiced by established conditions, had offered no complaint, and was not party to the proceedings. Neither the $1.35 rate to Jersey City nor any other participated in by the Philadelphia & Reading was declared unreasonable, either in itself or in relation to others; and there was no positive finding touching the reasonableness—intrinsic or relative—of the 80-cent schedule from 'Lehigh district' adopted by the remaining carriers. . . .

"We must assume the Jersey City rate is intrinsically reasonable and non-discriminatory in relation to those accorded other consuming points; and plainly, if this were put in effect by all carriers, the commission's order would be complied with, and the supposed discrimination disappear. It must be taken as true that no rate above what all might lawfully establish is being demanded by any carrier; and, with one exception, they are paid 40 per cent less than that amount. If a universal rate of $1.35 could not be justly complained of by the locality, certainly it is not discriminated against or unlawfully prejudiced because, failing to agree, most of the carriers have established an 80-cent schedule. In the circumstances disclosed it is impossible rightly to conclude that Jersey City is being subjected to 'any undue or unreasonable prejudice or disadvantage.'"—Philadelphia & Reading v. United States. Decided February 28, 1916.

Railway Officers

Executive, Financial, Legal and Accounting

L. G. Scott, who was appointed controller of the Wabash effective on March 1, was born at St. Louis, Mo., on June 12, 1864. He was educated in the public schools of that city, and entered railway service in January, 1880, in the office of the auditor of the St. Louis, Iron Mountain & Southern. In 1881, when this road was consolidated with the Missouri Pacific, he was placed in the ticket department of the auditor's office. From July, 1884, to December 1, 1900, he was employed in the ticket department of the auditor's office on the Texas & St. Louis, now the St. Louis Southwestern. While with this company he held various positions, including traveling auditor and chief clerk of general accounts. From December 1, 1900, to April 1, 1903, he was chief clerk to the auditor of the Minneapolis & St. Louis, and from the latter date to January, 1914, was auditor of the same road. On February 11, 1908, he was also made assistant secretary, and in October, 1913, was made a member of the valuation committee. From January, 1914, to March 1, 1916, he was auditor of the Texas & Pacific, with office at Dallas, Tex. As controller of the Wabash, he will be stationed at St. Louis, Mo.

L. G. Scott

A. J. County, special assistant to the president of the Pennsylvania Railroad at Philadelphia, Pa., has been elected vice-president in charge of accounting, with headquarters at Philadelphia. Mr. County has been in the service of the Pennsylvania Railroad since 1890. He was born in Dublin, Ireland, on August 1, 1871. He received his early education in that city, and graduated in 1908 from the Wharton School of Finance, Transportation and Accounting of the University of Pennsylvania. He began railway work in July, 1885, when he entered the purchasing department of the Great Southern & Western Railway, of Ireland. On November 20, 1890, he became a clerk in the secretary's department of the Pennsylvania Railroad. In June, 1898, he was appointed chief clerk, and on December 1, 1900, was made assistant to the secretary. He was appointed assistant secretary of the Pennsylvania in February, 1901, and later of the Philadelphia, Baltimore & Washington, the Northern Central, and other companies in the Pennsylvania Railroad System East of Pittsburgh and Erie, and also superintendent of the Pennsylvania Railroad Employees' Saving Fund. In June, 1906, he was appointed as-

A. J. County

sistant to Samuel Rea, vice-president, going with him to the president's office late in 1912.

J. T. Hawkins has been appointed freight claim agent of the Quebec Central, with office at Sherbrooke, Que.

S. P. Merriam, chief clerk in the office of the treasurer of the St. Louis Southwestern, has been appointed paymaster, with office at St. Louis, Mo., succeeding J. L. Tracy, deceased.

A. J. Sopris, chief clerk in the passenger department of the Ft. Worth & Denver City at Ft. Worth, Tex., has been appointed auditor of passenger accounts of the Denver & Salt Lake, with office at Denver, Colo.

J. S. Pyeatt has been elected president of the New Orleans, Texas & Mexico, recently reorganized. Y. Vandenberg has been elected chairman of the executive board; G. H. Walker has been elected vice-president, and J. H. Lauderdale, treasurer and assistant secretary.

George B. Elliott, who has been elected general counsel of the Atlantic Coast Line, with headquarters at Wilmington, N. C., as has already been announced in these columns, was born on March 22, 1873, at Norfolk, Va. He graduated from the Virginia Military Institute in 1892 with the degree of C. E., and from Harvard Law School in 1896 with the degree of LL. B. He began railway work in September, 1892, as assistant resident engineer of the Chesapeake & Ohio and from 1893 to 1896 attended Harvard Law School. In September, 1896, he entered the service of the Atlantic Coast Line as special attorney, and the following May was made local counsel at Richmond, Va. On January 1, 1906, he was appointed assistant general counsel of the Atlantic Coast Line at Wilmington, N. C., becoming general solicitor in December, 1915, which position he held at the time of his recent election as general counsel of the same road, as above mentioned.

Operating

Rev. Charles L. Bass has been appointed welfare agent of the Southern Railway, with headquarters at Atlanta, Ga.

H. M. Gargan has been appointed assistant trainmaster of the Delaware & Hudson, vice F. C. Pratt, resigned.

Lawrence Ennis, train despatcher of the Southern Railway at Tuscumbia, Ala., has been appointed chief train despatcher, succeeding H. C. Fromwalt.

Ralph E. Newcomer, special accountant in the office of general manager of the Wabash, has been appointed trainmaster of the Grand Trunk, with office at London, Ont.

B. L. Bugg, assistant general manager of the Atlanta, Birmingham & Atlantic, has been appointed general manager, with headquarters at Atlanta, Ga. The office of assistant general manager has been abolished.

H. C. Oviatt, assistant mechanical superintendent of New York, New Haven & Hartford, at New Haven, Conn., has been appointed superintendent of the Shore Line division, with office at New Haven, vice J. D. Gallary.

C. B. Falley, trainmaster of the Chicago & Eastern Illinois, at Salem, Ill., has been promoted to superintendent of the Indiana division, with office at Terre Haute, Ind. W. S. Reeder, chief despatcher, has been promoted to trainmaster, vice Mr. Falley.

J. W. Roberts has been appointed superintendent of freight transportation of the Cincinnati, Lebanon & Northern, with office at Pittsburgh, Pa., in charge of matters heretofore handled by the general superintendent of freight transportation. Effective March 1.

O. H. Hobbs, superintendent of the Ohio River division of the Baltimore & Ohio at Parkersburg, W. Va., has been appointed to a position on the staff of General Manager C. W. Galloway at Baltimore, Md., and F. G. Hoskins, division engineer at Philadelphia, Pa., succeeds Mr. Hobbs.

T. C. McCarthy, trainmaster of the Buffalo, Rochester & Pittsburgh, at East Salamanca, N. Y., has been promoted to assistant superintendent of the Buffalo and Rochester divisions, with headquarters at East Salamanca. He entered the service of the Buffalo, Rochester & Pittsburgh on July 3, 1894, as telegraph operator, and in October, 1897, was promoted to train despatcher at Bradford, Pa. In September, 1911, he was appointed chief despatcher of the Buffalo division and two years later became trainmaster of the same division.

J. W. Kelly, Jr., whose appointment as general manager of the Dayton & Union and the Dayton Union, with office at Dayton, Ohio, has been announced, entered railway service as clerk in the office of the superintendent of the Baltimore & Ohio, at Baltimore, Md. He held various clerical positions in the offices of the general superintendent and general manager, and on November 1, 1901, was appointed assistant trainmaster at Cumberland, Md. On January 1, 1903, he became assistant chief clerk in the office of the general superintendent at Baltimore, and later was promoted to chief clerk in the same office. On April 1, 1905, he was appointed trainmaster of the Baltimore division, and on October 1, 1910, was promoted to assistant superintendent of the Cumberland division, with office at Keyser, W. Va. About a year later, he was made superintendent of this division, and on January 1, 1915, was transferred to the New Castle (Pa.) division as superintendent.

J. W. Kelly, Jr.

Edward Emmett Regan, whose appointment as superintendent of the Midland division of the New York, New Haven & Hartford with office at Boston, Mass., has already been announced in these columns, was born on October 30, 1875, at Branford, Conn., and was educated in the high school of his native town. He began railway work on June 13, 1893, with the New York, New Haven & Hartford as junior clerk and messenger at the New Haven, Conn., freight station, and on September 1, of the same year he became stenographer. From February, 1895, to September, 1898, he served as superintendent's clerk and then to 1902 as crew despatcher. He then was chief clerk until February, 1908, when he was appointed assistant general yardmaster, becoming general yardmaster in November of the following year. On December 16, 1909, he was appointed assistant trainmaster, and was promoted to trainmaster in January, 1912, which position he held at the time of his recent appointment as superintendent as above noted. Mr. Regan's entire service has been with the New York, New Haven & Hartford.

E. E. Regan

Traffic

C. E. Baker has been appointed district freight agent of the Oregon Short Line at Salt Lake City, Utah, vice H. E. Godwin, promoted.

G. D. Wadsworth has been appointed assistant general freight and passenger agent of the Quebec Central, with office at Sherbrooke, Que.

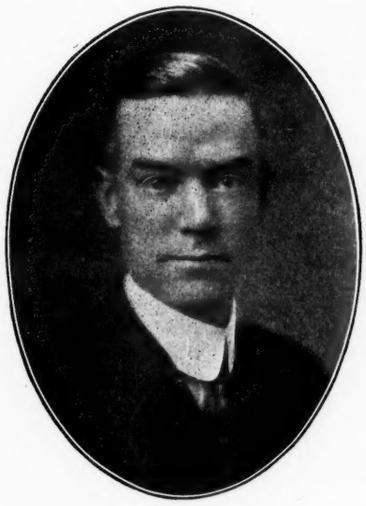
W. C. Barnes has been appointed traffic manager of the Tucson, Cornelia & Gila Bend, with office at El Paso, succeeding A. N. Brown, deceased.

A. J. Blaisdell, general agent, passenger department, of the

Canadian Pacific at St. Louis, Mo., has been transferred to Shanghai, China, as general agent of the Canadian Pacific Ocean Services.

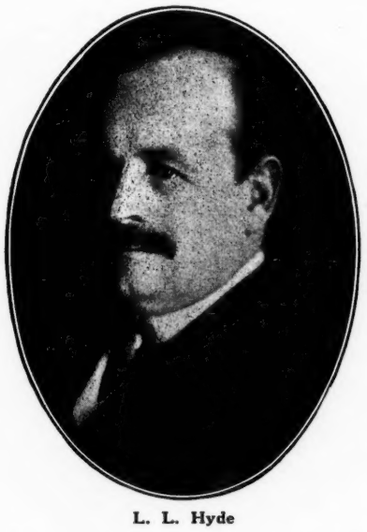
S. S. Butler, traffic manager of the Beaumont, Sour Lake & Western and the St. Louis, Brownsville & Mexico, with office at Houston, Tex., has resigned to become general southwestern agent of the Frisco Lines, with headquarters in the same city.

C. A. Butler, whose appointment as assistant general freight agent of the Chicago, Milwaukee & St. Paul has been announced, was born at Springfield, Ill., in 1879. Mr. Butler's entire railway career has been with the Chicago, Milwaukee & St. Paul, and its former subsidiary, the Chicago, Milwaukee & Puget Sound. For six years previous to entering railway service he was a member of the tariff revision committee of the Western Trunk Line Committee at Chicago, Ill. Early in 1909 he entered the employ of the Puget Sound as chief tariff clerk, but was transferred to the service of the St. Paul in June of the same year as a clerk in the vice-president's office. Later he was promoted to chief clerk in the same office, and in August, 1914, was made chief of the tariff bureau. As assistant general freight agent he will continue to have headquarters at Chicago, Ill.



C. A. Butler

Louis L. Hyde, whose promotion to general freight agent of the Lake Erie & Western has been announced, is a native of New York City. He entered railway service in May, 1883, in the engineering department of the Denver & Rio Grande Extension Company. In 1884 he entered the local freight office of the Wabash at East St. Louis, Ill., and in 1886 went to Springfield, Ill., as chief clerk to the division superintendent of the same railroad. His next position was that of chief clerk in the loss and damage department of the Missouri Pacific at St. Louis, Mo., where he went in 1887. In 1888 he was made chief clerk in the freight claim department of the Cleveland, Cincinnati, Chicago & St. Louis at Cincinnati, Ohio. Subsequently, he was promoted to freight claim agent and assistant general freight claim agent of the same railway. He left the service of the Big Four in April, 1900, and located in New York City as a broker in cotton. In the latter part of 1903 he became general agent for the Lake Shore & Michigan Central, and the Delaware, Lackawanna & Western, at Chicago, Ill., and in November, 1905, was appointed assistant general freight agent for the Lake Erie & Western, with office at Peoria, Ill. On January 17, 1916, he was promoted to general freight agent, with headquarters at Indianapolis, Ind.



L. L. Hyde

Engineering and Rolling Stock

M. F. McCarra has been appointed master mechanic of the Illinois Southern, with office at Sparta, Ill., succeeding G. A. Gallagher, deceased.

T. W. Coe, superintendent of shops at Elkhart, Ind., of the New York Central Lines west of Buffalo, has been appointed master mechanic of the Indiana Harbor Belt, with headquarters at Gibson, Ind., in charge of the machinery and car departments.

Philip H. Conniff, whose appointment as assistant superintendent of motive power and machinery of the Florida East Coast, with headquarters at St. Augustine, Fla., has already been announced in these columns, was born on April 10, 1871, in Trumbull county, Ohio, and was educated in the public schools of Allegheny county, Pa. In April, 1891, he entered the service of the Pittsburgh & Lake Erie at McKees Rocks, Pa., and left that road in 1896, to go to the Pennsylvania Lines West as a machinist at the Allegheny, Pa., shops. He was promoted, in 1898, to assistant roundhouse foreman and in 1900 was transferred to Ashtabula as general foreman. The following year he returned to the Allegheny shops as general roundhouse foreman. In January, 1902, he entered the service of the Baltimore & Ohio as general foreman at Lorain, Ohio, and in 1906, was promoted to master mechanic of the Wheeling division. He was transferred to the Washington Terminal Company in charge of the locomotive department in 1908, and was appointed master mechanic of the Connellsville division of the Baltimore & Ohio in 1910. The following year he was appointed master mechanic of the Cumberland division of the same road. In June, 1912, he was transferred to Baltimore, Md., as superintendent of the locomotive and car departments at the Mt. Clare shops, and left the service of that road in January of this year to go to the Florida East Coast as assistant superintendent of motive power and machinery as above noted.

P. H. Conniff

OBITUARY

C. W. Milholland, resident engineer of the Baltimore & Ohio at Cincinnati, Ohio, died in that city on February 23.

James A. Pfouts, secretary and treasurer of the Huntingdon & Broad Top Mountain Railroad, of Philadelphia, Pa., died of apoplexy on March 7, in New York at the age of 55.

A. Branin, who retired from railway service eight years ago as assistant superintendent of the Bellingham Bay & British Columbia, at Bellingham, Wash., died recently at Glacier, Wash.

James Van Allen Trumbull, who was division superintendent of the New York, New Haven & Hartford at New London, Conn., in 1903, and before that for many years at Hartford, died on March 5.

William Sooy Smith, one of the most distinguished civil engineers of the last generation, died at Medford, Ore., on March 5. He was born at Tarlton, Ohio, on July 22, 1830, and graduated from the Ohio University in 1849 and from West Point in 1853. He resigned from the United States army in 1854 to enter private engineering work. He again served in the army during the Civil War, resigning as brigadier-general in September, 1864. Mr. Smith built the first all-steel railway bridge in the world at Glasgow, Mo. With his son Charles he introduced into this country a freezing process for difficult subaqueous work which completely changed methods of constructing foundations for heavy buildings in Chicago, carrying loads down through mud and soft earth to hard bottom 50 ft. or more by means of piles cut off below water surface; and, where these could not be driven without endangering adjacent foundations, by sinking columns of concrete to hard bottom. He also was the inventor of the pneumatic caisson and made the first one ever built. He retired from active work some years ago.

Equipment and Supplies

LOCOMOTIVES

THE PEORIA & PEKIN UNION has issued inquiries for 5 locomotives.

THE CHICAGO SHORT LINE RAILWAY is inquiring for one locomotive.

THE CHICAGO GREAT WESTERN is inquiring for prices on 10 locomotives.

THE PHILADELPHIA & READING is building 5 locomotives in its own shops.

THE CHICAGO, BURLINGTON & QUINCY has issued inquiries for 15 Mikado and 15 Santa Fe type locomotives.

THE BESSEMER & LAKE ERIE, which recently ordered 20 Santa Fe type locomotives, is now understood to be contemplating the purchase of 4 or 5 Pacific type locomotives.

THE PENNSYLVANIA EQUIPMENT COMPANY, Philadelphia, Pa., is in the market for 2 or 3 second-hand standard gage four-wheel or six-wheel saddle tank locomotives.

THE MELLEN LUMBER COMPANY, Mellen, Wis., reported in last week's issue as inquiring for a logging locomotive, has ordered one Prairie type locomotive from the Baldwin Locomotive Works.

THE RAPID CITY, BLACK HILLS & WESTERN, reported in last week's issue as inquiring for prices on one locomotive, has ordered one Prairie type locomotive from the Baldwin Locomotive Works.

THE PULLMAN COMPANY, reported in the *Railway Age Gazette* of February 18 as inquiring for one 4-wheel locomotive, has ordered 1 switching locomotive from the American Locomotive Company.

THE CHICAGO, INDIANAPOLIS & LOUISVILLE, reported in last week's issue as contemplating the purchase of a number of locomotives, has issued inquiries for 5 Santa Fe and 4 Pacific type locomotives.

THE CHICAGO & NORTH WESTERN, reported in the *Railway Age Gazette* of February 25 as having asked bids on 28 six-wheel switching, 14 Pacific and 35 Mikado locomotives, has ordered these locomotives from the American Locomotive Company.

THE CERRO DE PASCO has ordered 2 Consolidation locomotives from the American Locomotive Company. These locomotives will have 21 by 28-in. cylinders, 50-in. driving wheels, and a total weight in working order of 160,000 lb. They are for service in Peru.

THE BUFFALO CREEK RAILROAD has ordered 3 superheater eight-wheel switching locomotives from the American Locomotive Company. These locomotives will have 22 by 28-in. cylinders, 51-in. driving wheels, and a total weight in working order of 210,000 lb.

THE JAVA STATE RAILWAYS have ordered 8 superheater Mallet (2-8-8-0) type locomotives from the American Locomotive Company. These locomotives will have 17½ and 28 by 24-in. cylinders, 43⅜-in. driving wheels, and a total weight in working order of 200,500 lb.

THE NEW YORK CENTRAL was noted in last week's issue as having ordered the construction of 150 locomotives in various shops of the system and 152 locomotives from outside builders. The Boston & Albany is now understood to be preparing specifications for 10 additional switching locomotives.

THE QUELIMANE RAILWAY has ordered through G. Amsinck & Co., New York, one Mogul type locomotive from the American Locomotive Company. This locomotive will have 13 by 18-in. cylinders, 34½-in. driving wheels, and a total weight in working order of 53,000 lb.

THE ALTO CEDRO SUGAR COMPANY, through the West India Management & Consultation Company, has ordered one four-wheel switching locomotive from the American Locomotive Company. This locomotive will have 12 by 18-in. cylinders, 34½-in. driving wheels, and a total weight in working order of 51,000 lb. The West India Management & Consultation Company has offices in New York. The engines are for use in Cuba.

THE CENTRAL OF BRAZIL, reported in the *Railway Age Gazette* of February 18 as being in the market for 30 Consolidation, and in the issue of February 25 as being in the market for 6 Mallet type locomotives, has ordered 15 Consolidation and 3 Mallet (0-8-8-0) type locomotives from the American Locomotive Company. The Consolidation locomotives will have 21½ by 26-in. cylinders, 53-in. driving wheels, a total weight in working order of 163,000 lb., and will be equipped with superheaters. The Mallet type locomotives will have 20 and 32 by 26-in. cylinders, 50½-in. driving wheels, and a total weight in working order of 280,000 lb.

FREIGHT CARS

THE ATLANTIC COAST LINE has ordered 100 underframes from the Pressed Steel Car Company.

THE CHICAGO, MILWAUKEE & ST. PAUL is reported to be building 500 ore cars in its own shops.

THE CONSOLIDATION COAL COMPANY, Baltimore, Md., has revived its inquiry for 1,000 hopper cars.

THE NEW YORK CENTRAL has ordered 1,000 box cars from the American Car & Foundry Company for the New York, Chicago & St. Louis.

THE ILLINOIS CENTRAL has sent out specifications for 700 combination general service and ballast cars. These cars are to be of the Enterprise design, and the inquiry replaces inquiries for 300 hopper and 400 work cars, which were withdrawn in February.

PASSENGER CARS

THE GRAND TRUNK is reported to have ordered 16 passenger train cars from the Osgood-Bradley Car Company.

THE LEHIGH VALLEY, reported in the *Railway Age Gazette* of February 11 as being in the market for one private car, has ordered this car from the Pullman Company.

THE ERIE has ordered 7 coaches and one combination passenger and baggage car for suburban service from the Pressed Steel Car Company. These cars will be all-steel cars, and will be of the Stilwell unit side frame construction.

IRON AND STEEL

THE KANSAS CITY SOUTHERN has placed an order for 6,000 tons of rails.

THE CHICAGO, MILWAUKEE & ST. PAUL has ordered 3,000 tons of open-hearth rails.

THE WHEELING & LAKE ERIE has ordered 5,000 tons of rails from the Carnegie Steel Company.

THE BESSEMER & LAKE ERIE has ordered 10,000 tons of steel from the American Bridge Company for a bridge over the Allegheny river near Pittsburgh.

THE SOUTHERN RAILWAY has ordered 5,000 tons of rails from the Maryland Steel Company, 5,000 tons from the Lackawanna Steel Company, and 30,000 tons from the Tennessee Coal, Iron & Railroad Company.

MACHINERY AND TOOLS

THE GRAND TRUNK is in the market for a 51-in. boring and turning mill for Canada and a Warner & Swasey hollow-hexagon turret lathe and a 36-in. Bullard vertical turret lathe for the United States.

THE CHICAGO, INDIANAPOLIS & LOUISVILLE has issued inquiries for the following machine tools: one 72-in. universal radial drilling machine; one No. 3 double-axle lathe; one 42-in. x 12-ft. engine lathe; one 24-in. x 8-ft. engine lathe; one 20-in. belt-driven toolroom lathe; one horizontal 30-in. gap punch; one hand-power punch; one 4-in. forging machine; one high-speed bulldozer; one 96-in. 600-ton driving wheel press; one double-end 18-in. throat shear; one 32-in. wood planing machine, belt driven, and one three-spindle wood boring machine, belt driven.

TRACK SPECIALTIES

THE CHICAGO, MILWAUKEE & ST. PAUL has placed orders for 6,500 tie plates and over 2,300 tons of track fastenings.

Supply Trade News

Fairbanks, Morse & Co., of Chicago, have closed a contract with the Southern for a conveyor-type coaling station to be erected at Huntingburg, Ind.

P. W. Seyl, assistant manager of the Gary, Ind., plant of the American Bridge Company, has been appointed manager succeeding P. J. Cunneen, deceased.

The West portable steam sterilizer, manufactured by the West Disinfecting Company, New York, has been favorably passed by the Underwriters' Laboratories, Chicago. A description of this sterilizer appeared in the *Railway Age Gazette* of September 18, 1914, page 515.

George Drake Smith, for the past two years supervisor of agencies for the General Vehicle Company, Inc., has been appointed special assistant to Harrison G. Thompson, vice-president and general sales manager of the Edison Storage Battery Company. Mr. Smith will make his headquarters at the general office of the company, Orange, N. J.

In order to take care of its rapidly increasing business, the Osgood Company, Marion, Ohio, manufacturer of steam shovels and dredges, has found it necessary to double its capacity and has purchased the manufacturing plant of the Ohio Tractor Company. The larger machine tools, for which crane service is desirable, will be moved to the main plant of the Osgood Company, while the smaller tools and the foundry will be operated at the present location. The Ohio Tractor Company has acquired a new site in the south part of Marion, and is making arrangements to increase its output.

B. B. Jones, of Oklahoma City, Okla., formerly with the Illinois Central at McComb, Miss., has been elected president of the O'Malley-Beare Valve Company, Railway Exchange, Chicago, succeeding R. L. Beare. The following men have been added to the sales force of the company: W. M. Leighton, formerly with the Paxton & Mitchell Company, Omaha, Neb.; H. M. Newell, formerly with the H. W. Johns-Manville Company; Blake C. Hooper, formerly with the Grip Nut Company, and J. N. Gallagher, formerly foreman of the boiler shops of the Illinois Central at Birmingham, Ala.

Samuel G. Allen has been elected president of the Franklin Railway Supply Company, New York, and Joel S. Coffin, formerly president, is now chairman of the board. Mr. Allen has served as vice-president since the incorporation of the company. He was born in 1870 at Warren, Pa., and was educated there and at the Pennsylvania State College. He was plunged into business responsibilities immediately after leaving college, but nevertheless found time to study law during a period of intense business activity. He was admitted to the bar in Warren county, Pa., and practiced law for nine years. In 1901 the Franklin Railway Supply Company was formed, with Mr. Coffin as president and Mr. Allen as vice-president. The ability of Mr. Allen as a lawyer and as a business man is reflected in the success of the large number of companies with which he is connected as an officer and director.

S. G. Allen

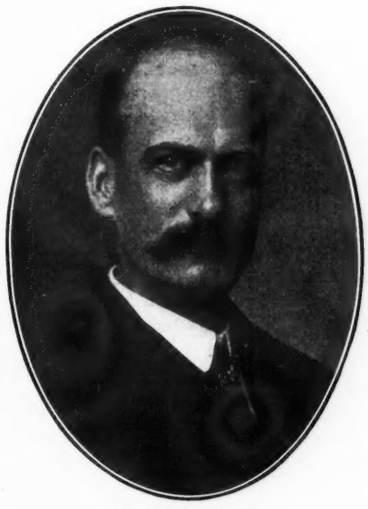
The Duluth plant of the Universal Portland Cement Company, known as mill No. 7, is now in operation. This plant has a daily capacity of 4,000 barrels of cement. It adjoins that of the Minnesota Steel Company, and uses blast furnace slag from the latter plant in the manufacture of this cement. The plant consists of 17 buildings, all of monolithic reinforced concrete construction, or of steel frame with concrete block walls and with concrete floors and roof. Twenty-seven circular concrete storage tanks are also provided. Between 300 and 400 men are employed for whose accommodation an industrial town called Morgan Park has been constructed.

J. V. W. Reynders, vice-president and a director of the Pennsylvania Steel Company, recently acquired by the Bethlehem Steel Corporation, has resigned and retired from the management of the works at Steelton, Pa. Quincy Bent, assistant to the president of the Maryland Steel Company, has been made general manager of the Steelton and Lebanon plants to succeed him.

The Locomotive Feed Water Heater Company

The Locomotive Feed Water Heater Company, 30 Church street, New York, has been organized with a capital stock of $1,000,000 and with the following incorporators: George M. Basford, Samuel G. Allen, E. A. Averill, H. F. Ball, Luther D. Lovekin, Joel S. Coffin, LeGrand Parish, J. E. Muhlfeld, George L. Bourne and V. Z. Caracristi. This company will develop and handle for locomotive use the film heater designed and patented by Luther D. Lovekin, chief engineer of the New York Ship Building Company. The officers of the company are: President, George M. Basford; vice-president, E. A. Averill. Mr. Basford will also form the G. M. Basford Company to handle the advertising accounts of a number of railway supply concerns.

George M. Basford is now chief engineer of the railroad department of Joseph T. Ryerson & Son, and will sever his connection with that company on March 15 to take up his new work. Mr. Basford was born in Boston in 1865, where he attended the public schools. He was graduated from the Massachusetts Institute of Technology in 1889, after which he entered the Charlestown shops of the Boston & Maine, later going to the Chicago, Burlington & Quincy as a draftsman at Aurora, Ill. He left the Burlington to take a position in the motive power department of the Union Pacific, and was connected with the test department of that road for some time, after which he entered the service of the Chicago, Milwaukee & St. Paul as signal engineer. Later he was superintendent of construction of the Johnson Railway Signal Company, was with the Union Switch & Signal Company for a short time, and then became signal engineer of the Hall Signal Company. In 1895 he became mechanical department editor of the Railway and Engineering Review, and in 1897 was made editor of the American Engineer and Railroad Journal when that publication was owned by R. M. Van Arsdale. In September, 1905, he was made assistant to the president of the American Locomotive Company, and in March, 1913, became chief engineer of the railroad department of Joseph T. Ryerson & Son.



G. M. Basford

Mr. Basford was one of the founders of the Railway Signal Association, and has been known as the father of that organization. He has been closely identified with the development of the locomotive in this country, and is also noted because of the inspiration and assistance which he has given not only in developing rational apprenticeship courses for mechanics in the motive power department, but in the efforts he has made to

awaken railway officers generally to the necessity for giving more attention to the selection, training and promotion of employees. His work with the American Locomotive Company was notable among other things for the development of the publicity campaign of that company which has been an important factor in awakening railway supply manufacturers to the possibilities of advertising. During the early stages of the development of the Railway Business Association in the winter of 1908-9 arrangements were made with the American Locomotive Company whereby Mr. Basford gave part of his time to that association as secretary. A more complete sketch of Mr. Basford will be found in the *Railway Age Gazette* of March 14, 1913, page 526.

E. A. Averill was born at Richland, N. Y., August 13, 1878, and after a preparatory education in public and private schools entered Cornell University in 1896. He was graduated in 1900 with the degree of mechanical engineer and specialized in railway mechanical engineering during his senior year. The summer of 1889 he spent in the shops of the Philadelphia & Reading, Reading, Pa., and after graduation went into the shops of the Chicago, Burlington & Quincy at West Burlington, Iowa. After four years' service with the Burlington, the greater part of which was spent in shop and roundhouse work and on the road, Mr. Averill joined the staff of the Railway and Engineering Review of Chicago. On January 1, 1906, he joined the editorial staff of the American Engineer and Railroad Journal, and on April 1, 1910, became managing editor of that publication. On March 1, 1914, he was made engineer of operation of the Standard Stoker Company, with which company he has been connected until recently.

E. A. Averill

The American-Russian Chamber of Commerce

E. C. Porter, commercial agent in charge of the New York office of the Bureau of Foreign and Domestic Commerce (United States Department of Commerce), has resigned to accept the position of executive secretary of the American-Russian Chamber of Commerce.

This organization is a new one recently formed with headquarters in New York City by representatives of some of the leading financial and industrial interests of the country. The first board of directors includes Samuel McRoberts, first vice-president of the National City Bank; Charles H. Sabin, president of the Guaranty Trust Company; Darwin P. Kingsley, president of the New York Life Insurance Company; A. Barton Hepburn, chairman of the board of directors of the Chase National bank; George McFadden, cotton exporter of Philadelphia; Daniel G. Wing, president of the First National bank of Boston; James Parmelee, president of the National Carbon Company of Cleveland, Ohio; William J. Chalmers, manufacturer, Chicago; Frederic W. Allen, of Lee, Higginson & Co.; Charles Hayden, of Hayden, Stone & Co.; Charles S. Sargent, Jr., of Kidder, Peabody & Co., and Hayden B. Harris, of Harris, Forbes & Co.

The membership of the chamber includes such organizations as the American International Corporation, American Hide & Leather Co., the Allied Machinery Company of America, Baldwin Locomotive Works, Consolidation Coal Company, Du Pont de Nemours Powder Company, Rice & Hutchins, shoe manufacturers, Boston; Remington Arms-Union Metallic Cartridge Company, Midvale Steel Company, Pressed Steel Car Company, Simmons Hardware Company, Barrett Company, Berlin Mills Company, Portland, Me.; L. E. Waterman Company, J. G. White Engineering Company, American Trading Company and others.

It will be in close association with the Russian-American Chamber of Commerce in Moscow, which represents influential Russian business interests, and has the official sanction of the Imperial Russian government.

The Lackawanna Steel Company

The total net earnings of all properties of the Lackawanna Steel Company for the year ended December 31, 1915, after deducting all expenses, including ordinary repairs and maintenance amounting to $2,932,711, were $5,977,470, as against only $1,581,378 in 1914. From this total there were deducted interest amounting to $1,943,183 and rentals and royalties amounting to $101,536, leaving a profit of $3,932,750. There were appropriations of $313,115 for extinguishment of mines and mining investments, and $1,210,527 for depreciation and accruing renewals, a total of $1,523,642, so that the profit for the year was $2,409,108. The surplus on December 31, 1915, was $8,082,272 as compared with $5,777,457 on January 1, 1915.

President E. A. S. Clarke says in the report that the year closed with the greatest volume of orders on hand and at the highest prices in the company's history. Shipments increased about 55 per cent over 1914; and the average price per gross ton of $30.75 received therefor was $2.67 more than in 1914, a gain of 9½ per cent. Although the operations of the first four months showed a deficit of over $600,000, the year ended with net profits of $2,409,108, equivalent to 6.93 per cent. on the company's outstanding stock, the profits of the last quarter being $1,795,758, which was at the rate of 20.66 per cent. on the outstanding stock.

The balance sheet follows:

ASSETS

Cost of property, real estate, buildings, plant, machinery, etc.		$69,554,004.73
Investments in ore companies, etc.		6,122,051.19
Cash in hands of sinking fund trustees and other trust funds		212,303.38
Current assets—		
Inventories	$9,893,103.96	
Miscellaneous accounts receivable	434,145.52	
Customers' accounts (less reserves)	5,517,278.93	
Notes receivable	711.379.55	
Cash	2,901,431.27	
Companies' and other marketable securties at cost	432,307.27	
		19,889,646.50
Deferred charges		481,562.86
		$96,259,568.66

LIABILITIES

Common stock		$34,750,000.00
Capital stock of subsidiary companies not held by Lackawanna Steel Company		13,400.00
Bonded debt		25,000,000.00
Subsidiary companies' bonds		6,198,000.00
Six per cent two-year gold notes, due 1917		6,000,000.00
Current liabilities—		
Current accounts payable and pay-rolls	$3,269,524.70	
Bills payable	642,718.31	
Taxes and interest accrued	677,946.24	
		4,590,189.25
Reserves—		
For depreciation and replacement	$6,977,192.69	
For extinguishment of mines and mining investments	4,212,708.79	
For contingent and miscellaneous operations	435,805.80	
		11,625,707.28
Surplus		8,082,272.13
		$96,259,568.66

American Steel Foundries

The annual report of the American Steel Foundries for the year ended December 31, 1915, shows that the net earnings of the company for the year were $264,156, as compared with net earnings in the previous year of $240,994. The gross sales for the year were $10,024,870, as against $11,125,091 in 1914. The net earnings from operations of plants were $517,325; there was $204,083 charged off for depreciation, leaving a net profit from operations of $313,242. There was in addition to this $189,523 of miscellaneous income, making a total profit and income of $502,765. Interest charges amounted to $238,609, leaving a net profit of $264,156. From this net profit, however, there was deducted $577,591 appropriated for bonds, sinking fund and debenture retirement reserves. The surplus at the close of the year was $448.414, as compared with $667,987 on January 1, 1915.

President R. P. Lamont says in his report:

"At the present time we have more tonnage on our books than ever before in the history of the company, and at improved prices. In addition to this volume of work in our regular lines we have orders for steel and forgings for foreign account amounting to approximately $18,000,000, a considerable part of which, however, has been sublet to other manufacturers. Under

normal conditions we could look forward with confidence to a record-breaking year, both in output and earnings. On account of the uncertainties of the war, of the presidential election, and of the crops, it is impossible to see very far ahead. However, with the very large tonnage already booked we can see satisfactory earnings ahead for at least six months, and we are very hopeful for the balance of the year."

The principal items in the balance sheet follow:

ASSETS

Real estate, buildings, plant, machinery, tools, equipment, patents and good will:		
December 31, 1914	$20,303,277.68	
Additions during the year	178,483.33	
	$20,481,761.01	
Real estate not used for business purposes	298,630.15	
		$20,780,391.16
Sinking fund assets		266,527.22
Miscellaneous securities	$56,482.57	
Inventories	3,787,957.54	
Accounts and bills receivable (less reserves)	3,122,421.08	
Cash	281,101.65	
		7,247,962.84
Insurance premiums, etc., prepaid		100,240.20
		$28,395,121.42

LIABILITIES

Capital stock		$17,184,000.00
Bonds and debentures		4,364,300.00
Notes payable	$1,050,000.00	
Accounts payable (including advances received on contracts)	1,431,513.85	
Payroll accrued	225,046.51	
Accrued interest on bonds and debentures	98,580.00	
		2,805,140.36
Depreciation, renewal and other reserves		975,587.46
Appropriated surplus		2,617,680.07
Undivided surplus		448,413.53
		$28,395,121.42

TRADE PUBLICATIONS

TIMBER FOR STRUCTURAL PURPOSES.—The Structural Timber department of the National Lumber Manufacturers' Association, Chicago, has issued the first of a series of engineering publications on structural timber. This book of 20 pages discusses briefly the need for engineering information concerning timber. It also contains much information of value regarding the available supply of timber, its relative cost and its suitability for modern forms of mill or other construction, and serves to introduce later bulletins which will deal more specifically with the various phases of structural timber.

CENTRIFUGAL PUMPS.—The Allis-Chalmers Manufacturing Company, Milwaukee, Wis., has recently issued pamphlets describing its centrifugal pumps and pumping units, and a summary of tests on a 10-in. centrifugal pump. In these tests the maximum efficiency of 85 per cent. was reported. The pamphlet describing the centrifugal pumping units shows cross section illustrations of the various types of pumps manufactured by that company, describes the construction and gives the reports of tests made with the different types. Illustrations of test plants and various pump installations are also included.

PUMPS.—The A. S. Cameron Steam Pump Works, New York, has recently issued bulletins Nos. 154 and 110. The former is devoted to Cameron centrifugal pumps. Sectional views are used to illustrate both the single and double suction open impeller types, and the booklet gives tables of capacities, speeds and horse powers. Catalog 110 covers the Cameron line of duplex pumps, including both piston and plunger types, with single and compound steam cylinders for general service, boiler feeding, tank service, water works, hydraulic elevators, automatic pumps and receivers, brewery, quarry and mining work. The catalog is well illustrated and also contains tables of sizes and capacities.

ALLOYS.—The Titanium Alloy Manufacturing Company, Niagara Falls, N. Y., has recently issued, through its bronze department, a booklet bearing the title: Titanium Aluminum and other standard bronze castings. This booklet describes over 30 alloys made by the company for various uses. In the case of each alloy there are given the approximate composition, the service for which the bronze is best adapted and the physical properties, as well as etchings showing each alloy magnified 20 and 200 diameters. A number of pages in the book explain how the various tests were made and contain tables showing: The electro-chemical series of the elements; the resistance and relative conductivity of various metals and alloys; physical constants of the more common metallic elements, etc.

Railway Construction

AUGUSTA & NORTH.—Application has been made under this name in Georgia for a charter, and as soon as the charter is granted the company will complete its organization. The plans call for building a line from Augusta, Ga., east to a connection with the Seaboard Air Line at North, S. C., about 60 miles, and the promoters expect to carry out the work during 1916. The line will connect with the Augusta & Western, which was recently granted a charter in Georgia to build from Augusta, northwest to Athens, about 95 miles, where a connection will be made with the Seaboard Air Line. A. J. Twiggs & Sons, Augusta, will build both lines. (Feb. 25, p. 377.)

AUGUSTA & WESTERN.—See Augusta & North.

CHATTAHOOCHEE VALLEY.—Work is to be started at once, it is said, on an extension from the southern terminus at Jester, Ala., south to a connection with the Central of Georgia in Lee county, Alabama, about 10 miles. This company, which now operates a line from Standing Rock, Ala., south via West Point, Ga., to Jester, Ala., 34 miles, made surveys and secured a right of way in 1914 for an extension to connect with a line to Columbus.

CHICAGO, BURLINGTON & QUINCY.—This company contemplates beginning work on track elevation in Aurora, Ill., soon, that will involve the construction of ten street subways, a viaduct over the tracks of the Elgin, Joliet & Eastern and a bridge over Fox river. Three tracks are to be elevated.

Contracts for the team work on the construction of second track between Smithboro, Ill., and Keyesport, Centralia and Woodlawn, and Sesser and Ziegler Junction, mentioned in our issue of a week ago, have been awarded to M. C. Connors & Co., of Chicago, Ill., and M. L. Windham, of Christopher, Ill. Steam shovel work will be done by the railroad's own forces.

CONSOLIDATED-VERMILION & EXTENSION COMPANY.—This company is building a private spur from the Burntside Lake branch of The Duluth & Iron Range to its mine, a distance of 5.75 miles. The contract for the grading was awarded to C. W. Werdenhoff of Minneapolis, Minn., who has the work about one-third completed. The maximum grade is about 2½ per cent. and the maximum curve 9 deg.

DENVER & RIO GRANDE.—This company is now conducting surveys for a branch line into the Uintah basin, Utah. J. G. Gwyn, chief engineer.

NEW YORK, NEW HAVEN & HARTFORD.—A contract has been given to Lathrop & Shea, New Haven, Conn., for grading work for two additional tracks and grade reduction work, between Groton, Conn., and Midway, 3.1 miles. The work involves handling about 40,000 cu. yd. to the mile; about one-half of this will be rock work. There will be three short highway spans on the line, calling for about 300 tons of steel and the construction of 2,000 cu. yd. of concrete.

NEW YORK SUBWAYS.—The contract for track installation on the Lexington avenue subway, the Jerome avenue branch and the One Hundred and Forty-ninth street loop, has been awarded by the New York Public Service Commission, First district, to the Empire Construction Company, the lowest bidder, at $276,433 (March 3, p. 417).

PITTSBURGH, HARMONY, BUTLER & NEW CASTLE (ELECTRIC).—Surveys have been started, it is said, for an extension to be built to Darlington, Pa. The question of building an extension into Columbiana county, Ohio, is under consideration. The company now operates a line from Pittsburgh northwest to New Castle, with a branch from Evans City to Butler and another branch from Ellwood City to Beaver Falls.

RAILWAY STRUCTURES

BROOKLYN, N. Y.—The New York Public Service Commission, First district, has authorized the New York Municipal Railway Corporation to award the contract for the construction of the

Coney Island terminal to the Lord Construction Company, the lowest bidder, at $1,279,274 (March 3, p. 418).

CHICAGO, ILL.—The city council has passed an ordinance providing for the reconstruction of the Illinois Central subways between Fifty-first and Sixty-seventh streets. These structures now carry eight tracks.

The Baltimore & Ohio has completed plans for the extension of subways to provide for a total of seven tracks at Western avenue, Throop street, Blue Island avenue, Morgan street, Sangamon street, Peoria street, Newberry avenue, Halsted street and Union street. A new subway will be constructed at Cicero avenue. The subways will consist of longitudinal trough, ballasted floors supported on concrete abutments and rows of columns at the curb and center lines of the streets. Part of the steel has been ordered and tenders will be asked on the erection work later in the year. The concrete work will be done by company forces. Deliveries of steel for a 3-track bridge over Sixty-third street are expected soon. About 120 tons will be required.

CLINTON, IOWA.—The Illinois Central is preparing plans for the reconstruction of its roundhouse here. The structure will be provided with a roof designed according to the company's present standards, and the 12 stalls and pits will be lengthened to 100 ft.

DEFIANCE, OHIO.—The Baltimore & Ohio is contemplating track elevation for a distance of about a mile in this city. The work involves the construction of a second track, five subways and bridges over the canal and river.

GARRETT, PA.—A contract has been given by the Baltimore & Ohio to the Mount Vernon Bridge Company, for building a bridge over Buffalo Creek at Garrett in Somerset county on the Connellsville division. It will consist of two spans of deck plate girders, each span to be 53 ft. long, to carry double track.

LAMBERT, ILL.—The bridge being built by the Chicago Bridge & Iron Works for the Chicago & Alton over the Sag canal is located at this station instead of at Blue Island, as stated in last week's issue

NASHVILLE, TENN.—A contract has been signed by the Nashville, Chattanooga & St. Louis, the Nashville Railway & Light Company, and the City of Nashville, it is said, for the construction jointly of a reinforced concrete viaduct to replace the steel structure on the Charlotte pike. The cost is estimated at $45,000.

NEW YORK.—An important addition to the facilities of the Baltimore & Ohio for handling freight at New York will be made, a contract having been let for a large two-section freight house on the marginal way at Twenty-sixth street. It will be a one-story structure, one section to be 50 ft. by 60 ft., and another section 27 ft. by 60 ft., with portal between the two sections. The freight house will have a steel frame covered with corrugated iron, and it will have concrete foundations.

A contract has been let by the Baltimore & Ohio for the construction of new pier, No. 21, East river. The substructure of this pier was built by the city of New York. It is also planned to make another addition to the Baltimore & Ohio's harbor facilities in New York by extending Pier 22, North river. All of this work will be started in the near future.

PONTIAC, MICH.—The Grand Trunk will erect steel, double-track bridges across Pike, Lawrence and Orchard Lake avenues. The steel superstructures have been contracted for, and the balance of the work will be done by company forces.

SAN ANTONIO, TEX.—The International & Great Northern has awarded the general contract for the erection of shops to the American Construction Company of Houston, Tex. The contract for the electric wiring was awarded to Martin Wright of San Antonio and the contract for the plumbing and sewerage to the Braden-Hudson Company of the same city. The main shop, including a boiler shop, machine shop and blacksmith shop, will be 300 ft. long by 125 ft. wide. The other buildings to be provided are as follows: a roundhouse containing 18 stalls; a store room, 36 ft. by 105 ft.; a copper shop, air shop and boiler washing room, 40 ft. by 160 ft.; a sand house, 16 ft. by 83 ft.; a woodworking shop, 62 ft. by 164 ft.; and a car shed, 65 ft. by 684 ft. These buildings will be of reinforced concrete and steel throughout. The main shop will contain an electric crane, which will operate throughout the entire length of the building. In addition to the shops, there will be about 12 miles of yard sidings. The entire outlay will involve an expenditure of approximately $300,000. O. H. Crittenden, chief engineer.

Railway Financial News

CHICAGO, ROCK ISLAND & PACIFIC RAILWAY.—The Amster Committee has sent to the holders of the refunding four per cent bonds a circular protesting against the deposit of these bonds with the bondholders' protective committee. It is declared that there is no need of such action at the present time; that these bonds are more secure than ever before, the business of the road having improved, and the "leakages, lax management and general waste of the past ten years having been brought to an end." The interest on the bonds has been paid properly, and is sure to be paid when due next month; and no court would order a foreclosure. It is also claimed that the Amster Committee is preparing plans by which the company will be furnished with $20,000,000 to $25,000,000 in cash with which to pay off notes, receivers' certificates, etc.

COLUMBUS & SOUTHERN.—This road, which runs from Wyandotte, Ohio, to South Bloomingville, 22 miles, has been sold for $43,000.

DENVER & RIO GRANDE.—E. L. Marston, of the firm of Blair & Co., New York, has resigned as a director of the Denver & Rio Grande.

FLEMINGTON, HINESVILLE & WESTERN.—This 5-mile road, Hinesville, Ga., southeast to McIntosh, has amended its charter and changed its name to Savannah, Nashville & Western. It now has the right to increase its capital stock from $25,000 to $450,000. McIntosh is on the Atlantic Coast Line, 31 miles southwest of Savannah.

MINNEAPOLIS & ST. LOUIS.—It is announced that 70 per cent of the preferred stock and over 60 per cent of the common stock have assented to the readjustment, and that about 81 per cent of the $2,500,000 notes have agreed to the extension under the plan to August 1. It will be necessary for only 75 per cent of each class of stock to agree to the plan to make it operative.

SAVANNAH, NASHVILLE & WESTERN.—See Flemington, Hinesville & Western.

WABASH-PITTSBURGH TERMINAL.—An Investigation into the financial history and practices of the Wabash-Pittsburgh Terminal is to be undertaken by the Interstate Commerce Commission.

SECTION OF PETROGRAD-KOLA RAILROAD COMPLETED.—Through traffic over the line now being built from Petrograd to the Arctic port of Kola is now possible as far as the rail head at the southwestern corner of the White sea at Soroka, but traffic along this line will be light until it is in full working order. The port of Soroka is not large, having had heretofore merely local fishing and lumbering importance. It has been subject to all the difficulties suffered by Archangel and caused by the ice conditions prevalent in the "neck" of the White sea, where it opens through a strait into the Arctic Ocean. In 1913 only 45 vessels put into this port, with a tonnage of 45,389, and the departures were 71 vessels, with a tonnage of 47,061. The vessels were extremely small, many being mere barges constructed roughly to carry lumber and intended to be knocked down at the end of the voyage to other White sea ports.

AMERICAN LOCOMOTIVES PLEASE NEW ZEALAND.—A recent issue of the Auckland Star, a leading daily paper of Auckland, New Zealand, said: "It is stated on reliable authority that the big railway engines imported from the United States by the New Zealand government last year have done more than come up to expectations. At the time of the order being placed with the Baldwin Locomotive Company some protests were made in parliament against the giving of orders for railway engines in countries not part of the British empire, but the fact was shown that the engines were urgently required, and that Great Britain could not supply them as quickly as the United States could. The locomotives are now at work on the lines of this dominion, and their hauling capacity is exciting the admiration of experts."